The Builder.

VOL. XLIV. No. 2093. SATURDAY, MARCH 17, 1883.

ILLUSTRATIONS.

Portal of the Church of San Pedro, Avila, Spain (Double-page Engraving) 348
Battersea Town-hall (Double-page Engraving).—Messrs. Morris & Stallwood, Architects 350
Parish Halls, Jersey: St. Ouen; St. Lawrence.—Messrs. Hayward & Son, Architects 352, 353

CONTENTS.

The Ventilators on the Embankment and in the Roads 337
Acragas, Agrigentum, Girgenti 338
The Forthcoming Paris *Salon* 339
Archæological Research 340
The Building Trade in Paris 340
Private Bill Legislation 341
The New Opera, "Henry VIII." 341
The Works at Parkeston: Civil and Mechanical Engineers' Society 341
The Female School of Art 342
The Church at Kew 343
The Smoke Nuisance, and an Account of some Experiments relating thereto 344
Portal of the Church of San Pedro, Avila, Spain 359
New Town-hall, Battersea 359
Parish Halls, Jersey 359
Hindrances 359
Fulham Infirmary Board of Guardians 360
Builders' Clerks' Benevolent Institution: Annual Dinner 360
International Electric Exhibition, Vienna, 1883 361
The Paris Ecole de Médecine 361
Chiswick Church 361
Machine Tools: the Institution of Civil Engineers 362
Exhibitions 362
The Brickwork of Chimneys 362
An English Church at Berlin 362
An Account of the Architects' Benevolent Society: Report of the Council, 1883 363
The Street Memorial 363
Healthy Houses: York Architectural Association 364
Sewerage at Slough 364
The Ass's Ears of the Pantheon 364
Roofing-Linen 364
Sanitary Inspection at Coventry 364
The Drainage of Amsterdam 364
Architects' Benevolent Society: Annual Meeting 365
Liability of Gas Companies for Accidents: Hornby v. The Liverpool United Gas Company (Limited) 364
From South Africa 365
Ripley Schools Competition 365
Competition Designs for Improvements in the Madeira-road, Brighton 365
Competitions 365
Sexey's County School, Somerset 365
Building Patent Record 365
Living in "Flats" 366
An Architect on Lawyers 366
The School Board and its Architects 366
Gloucester Cathedral 366
Corner Buildings and the Line of Front 367
A Difference 367
Cornwall Wesleyan Middle-class School Arbitration 367
Variorum 367
Miscellanea 367

The Ventilators on the Embankment and in the Roads.

VERY rarely does it occur that so great a storm of public indignation is excited by the perpetration, or proposal to perpetrate, any architectural enormity, as in the case of the projected ventilating-shafts on the Thames Embankment and elsewhere. In our last number (*ante*, p. 331) we gave an account of various protests made against the plan, and the indignation has only gathered strength as time has rolled on, without the railway company making any sign of yielding to the public feeling. Theirs is a dangerous confidence. Mr. Chamberlain, indeed, said that "he was afraid there was nothing to be done." We venture to differ from the President of the Board of Trade. Where there is a will (accompanied by power) there is usually a way.

It may, perhaps, be of but little immediate use, now that the Metropolitan District Company have obtained their Act, to say that they desire to exercise under it powers which it was not the intention of the Parliamentary Committee to grant them. Such, however, is, no doubt, the case. And we may be allowed to point out that, at all events, the spirit of the Standing Orders is most distinctly opposed to the carrying out such a surprise as is now sprung on the public. Whether, in the case of the Bill in question, the letter of the Standing Orders was or was not complied with, it is not for us to say. And supposing it to be proved that the latter was the case, such evidence would not, of itself, invalidate the Act, even if it were shown to be obtained under false pretexts. But it is of great importance to ascertain the real right and wrong of the case, not in a mere legal or technical sense, but as regards both public faith and the good faith of the railway company. To this end it is desirable to note, first, that the Act of Parliament now relied on is one that comes under the Second Class of Private Bills. In that case, it is provided by clause 47 of the Standing Orders (1882) that sections shall be deposited which shall show the surface of the ground marked on the plan, the intended level of the proposed work, height of every embankment, and the depth of every cutting,—all referred, by means of a datum horizontal line, to some fixed point.

Is the intended level of the proposed height of the ventilating-towers shown on the plans deposited by the District Railway Company? We recommend those who are now moving in the matter to have a careful examination made of the deposited plans, as it is quite conceivable that grounds may exist for obtaining an injunction if the company persist in carrying out, under the panoply of their Act, works as to which they did not take the legal and specified means of informing the public beforehand.

It is, of course, a question for legal advisers whether any such legal ground of arrest exists. We are now speaking of the moral right,—the sense of fair play which has not yet altogether deserted England,—and we think there can be no doubt that the company are carrying out an unexpected power obtained by surprise.

How, then, about the powerlessness of the Government to interfere? Do they wish to do so? It is not a question, be it remembered, of administrative action *mero motu*. As to that, there might be something to say, but we have not yet advanced so far. The actual state of the case is this. The inhabitants of the metropolis, especially those most concerned from the locality of their residences, come to the department of the administration which exercises a control over the construction and management of railways to complain that the directors of the Metropolitan District Railway are about to exercise powers which they claim to be conferred by their Act, to the great detriment of important parts of the metropolis. Here, it will be seen, such arguments as to Standing Orders and the like, as we have suggested, come in, as affording reasons for those who approach the Board of Trade to urge that the case is one most proper for Government to interfere about. There is a great mischief about to be perpetrated: we ask you to stop it,—at all events, until the opinion of Parliament can be taken on the subject.

"How can we interfere?" asks the President of the Board. Thus, we reply. It is within the competence of the Board (supposing all that we have before said to be correct) to make an official representation to the directors of the railway company to the following effect:—The Board are informed, and believe, that works are about to be carried out by the railway company of which no distinct plans or elevations were deposited before obtaining the Act, and which the Committee were not aware that they were authorising. These works are most strongly objected to by the neighbourhood, and, had they been distinctly shown to be in contemplation when the Bill was applied for, would have raised so strong an opposition that the Bill would probably have been lost. Further, the Metropolitan Board of Works have opposed the execution of this scheme, and the advice of competent experts is condemnatory of its details.

Under these circumstances, the Board of Trade may call the attention of the Company to the fact that their position before the country is undesirable. That it is even possible that they may not be altogether so sound as to their legal rights as they conceive, and that in any case, if the scheme is now pressed in face of so weighty an opposition, the Government may probably think it proper to oppose any future Bills promoted in Parliament by the Metropolitan District Board, unless they contain a clause repealing the obnoxious power of which complaint is now made.

The functions of the Board of Trade are, to some extent, indeterminate. The utility of the action of the Board is not always above criticism. In the case of railway returns the inadequacy of the present return made to and by the Board has been long lamented by their own most efficient officers. The Board shelter themselves under the plea that their inefficient returns are sanctioned by Parliament, and that it is for the shareholders to complain if they are not distinct enough. This plea,—which we have under our hands in black and white,—is only one instance of the anxiety "not to do it" which has so long since been pointed out as a striking characteristic of the subordinate officers of our public administrations. If in the present case the same spirit is allowed to prevent any interference on the part of the Board to defer a great public mischief, the public will form their own conclusions as to that portion of their administrative machinery.

We venture, however, to suggest, at all events for public consideration and discussion, a *modus vivendi* in the matter. Let us hear, or imagine, what the railway company may have to say in their own behalf. "Here," they may say, "is a pretty case! You have been for years complaining as to the atmosphere in our tunnels. We take measures to improve the ventilation,—a practical matter,—at our own cost, and we are met by a storm of sentimental complaint as to the unpicturesque character of our engineering works. What do you want us to do? How can we help smothering you if you will not let us build chimneys?"

This, we take it, is as fair a statement of the case for the Company as their most unhesitating advocates could put. What is the reply? In brief, this:—Two things require making plain. First, are the ventilating-shafts in question the only, or the best, method of effecting what is required? On that we are not at the moment prepared to say more than that the statement is disputed. As to that, then, the public, the Master of the Rolls, Parliament, or whatever may be the ultimate tribunal in the matter, will have to be satisfied.

Secondly, supposing a certain number of shafts are necessary, or desirable, in certain ascertained localities, is there any good reason why they should be hideous? Is a blank cylinder of brickwork, such as might be erected in such an abode of ugliness as,—let us say, Widnes,—the nearest representative on our shores of the infernal regions as imagined by Dante,—the proper treatment for a ventilator in an ornamental part of the metropolis? There is a singular want of the imaginative faculty, as well as of the sense of fitness, betrayed by the very proposition. Why need a ventilating tower be an unarchitectural eyesore? Why

should it not have some structural and monumental beauty?

A solution of the difficulty is not, however, to be hoped for from angry disputants. And we must confess that we should feel far more certitude that the Metropolitan District Railway Company would meet the views of the residents near their tunnel than we entertain at this moment, if we found that they were brought under any apprehension as to their permanent power to ride roughshod over all opponents. Therefore, again, we must hint at the possibility of an injunction. Of course, no Court of Justice would attempt to set aside the operation of plain law, however recently embodied in a statute. But as equity will prohibit the fulfilment of a bargain made when one of the parties concealed important elements of the question from the other party, so we hold there is a *primâ facie* case for, at all events, delay in giving effect to the clause of an Act of Parliament obtained without due notice (at all events, according to the spirit of Standing Orders) and without due comprehension in the minds of the committee or of the Legislature. We speak with all proper reserve on a matter which it may come before one of the heads of the law to decide. But we cannot but think that the mere attempt on the part of the various vestries which are now taking up the question, to put it on the ground of a ruse practised on both the neighbours and the Legislature, would tend so far to open the eyes of the directors to the possible consequences of obstinacy on their part in one way or another.

And, after all, we have our interests as railway travellers to remember. The accommodation rendered by the subterranean railways in London is of a magnitude that it is not easy to realise. Speaking of the year 1878,—as that is the last for which we have the returns of the Board of Trade, digested into useful form by the patient skill of Mr. Fleming, in the "Index to our Railway System,"—the Metropolitan District Railway conveys 10,000 passengers per mile per day throughout the year. This is for nine miles, and for 330 days in the year, giving 90,000 passengers per day. The trains, according to the same authority, run at five minutes' intervals. If the length of the passenger journey (on the average) were given by the returns, as is the case on almost all other railways, we should be able to gauge with accuracy the hourly flow of this human tide. But if we allow each passenger to travel three miles, we have 270,000 units, or passenger miles, travelled every eighteen hours. This is 15,000 units per hour. And as the running on the circle from one end to the other (although a speed of forty-five miles an hour is attained) is reduced by the frequent stoppage to something, we think, like 14 miles per hour, we come to the fact that upwards of 3,000 human beings, during every minute, on an average, from six a.m. to midnight, are filling their lungs with the vaporous contents of the tunnel, of the Metropolitan District line. Deduction, of course, must be made for the open portions of the line. On the other hand, in the hours immediately preceding and following those of ordinary business, the number of passengers in the trains at the same moment must be at least four times the average. Going up to the City from nine to ten,—and returning,—from four to five, there are probably at least 12,000 passengers underground. The lungs of this great population are liable to be seriously injured by exposure for twenty or thirty minutes twice a day, to a mephitic atmosphere. That this should be prevented we, among other persons who take an interest in sanitary matters, have long protested. Let us hope that the past effort made by the company to remove one cause of public complaint shall not, by mismanagement or otherwise, be so intimately associated with something almost equally objectionable, as to make it a loss to London whether the company succeed or fail in their scheme.

The Fisheries Exhibition.—The executive committee of the Great International Fisheries Exhibition have decided to light up the place by electricity, and Messrs. Davey, Paxman, & Co. have been by them selected to supply the necessary steam power. The engine and boiler power required is 700 horse-power indicated, and will consist of four large engines, the largest of which will be capable of indicating 350-h.p. They are pushing on with the engines and boilers, and fully expect to have everything complete by the opening-day in May.

ACRAGAS, AGRIGENTUM, GIRGENTI.

THE completion of the railway connecting Girgenti with the east as well as the north of Sicily may induce a number of travellers to visit the site of the once great city of Acragas, as well as of the other Greek settlements in the island. To the student in history, as well as to the architect, the remains of these Greek cities offer many points of interest, forming one of many links in the long chain of Greek development. Perhaps there is no chapter in history more inviting than that relating to the progress of the little Dorian colony that, starting from the foot of Parnassus, gradually spread over the peninsula, subdued the Peloponnese, founded settlements in Rhodes, Crete, and other islands in the Ægean, and established itself at various points on the shores of Sicily.

The history of the Agrigentines, like that of other small States whose rapid growth was due in a large measure to adventitious circumstances, is as brief as it was remarkable. Founded B.C. 582 by an offshoot of the Dorian settlement at Gela on the same coast, Acragas became in little more than a century the largest and most important of all the Greek colonies,—a rival of Athens and Corinth in the plenitude of their prosperity, and the envy of all the States bordering on the Mediterranean. Under the despotic sway of Phalaris and Theron, Acragas attained the climax of its greatness, and, if we may accept the words of Pindar, it was at that time "the most beautiful city of mortals." Empedocles also, a contemporary philosopher, and by far the most eminent man that Acragas produced, has asserted that "the inhabitants built their houses as though they were to live for ever, and indulged in luxury as if they were to die on the morrow." There is abundant evidence of the truth of these statements, even after a lapse of nearly 2,400 years; but, strange to say, history is silent as to the causes of this rapid growth of so small a State, which Mitford has not inaptly termed "a political phenomenon." There is no doubt, however, that the enterprising Greeks, on taking possession of these fertile shores, brought with them an improved system of husbandry, and that the opening out of a new field of commerce with such trading cities as Tyre and Carthage attracted hither a large number of wealthy citizens from other Greek settlements. The affluence and princely lives of the merchants have been commented on by more than one contemporary, and when we read that 800 chariots formed part of the bridal procession of a citizen's daughter, and that, on the occasion of an Agrigentine having gained the prize at the Olympic games, he was accompanied through the city by 300 chariots drawn by white horses, we cannot be astonished at finding the remains of so many magnificent temples. The story of the citizen Gelias, who exercised a liberal hospitality to all strangers, is a matter of history. It is narrated that, on one occasion, when 500 horsemen, passing the city walls during a violent storm, demanded shelter for the night, Gelias entertained them at his house, and, bidding them farewell on the morrow, presented each of them with a change of raiment. The tragic end of this generous citizen deserves to be better known. When the Carthagenians laid siege to Acragas, B.C. 406, Gelias retired for safety, with all his slaves and his vast accumulated wealth, to the Temple of Jupiter Atabyrius on the rock of Athens, and seeing that the invaders had effected an entrance into the city lying at his feet, and escape was impossible, he set fire to the temple, and was consumed with all his treasure.

Acragas never recovered this long disastrous siege. It attained considerable prosperity in the following century, but having sided with Hannibal in his fatal expedition against the Romans, it became a prey to the new invaders, its temples were despoiled, its leading citizens slain, and 25,000 of its inhabitants carried off into slavery. This was the last chapter in the history of Acragas. Although special privileges were accorded to it by the Romans, it never recovered itself; its independence was gone, the mixed character of its inhabitants no longer gave it any claim to nationality, and Agrigentum of the Roman Empire arose on the ruins of Acragas of the Greeks. The records of its history during ten centuries of Roman occupation are very scanty, and, with the exception of one monument, there are no evidences of Roman influence in the wilderness of stones that strew the vast plain. As this absence of monumental evidence is equally marked in the remains of other Greek cities in Sicily that fell under the Roman yoke, it is reasonable to assume that the island became of less importance as the Roman Empire spread over the mainland, and that the Agrigentines, allowing their city to fall into decay, withdrew for protection to the citadel that now forms the modern town of Girgenti. We know that it fell an easy prey to the Saracens in the ninth century, and that when the Normans overran the island 150 years later they made no attempt to restore the city, but established themselves as a small colony within the citadel.

It would be scarcely possible to conceive a more glorious prospect than that which greets the traveller as he looks from the walls of modern Girgenti upon the site of ancient Acragas. Girgenti looks down on Acragas, and Acragas looks down on the sea. Masses of hewn stone piled up or thrown down in endless confusion are scattered over the vast plain, and in the far distance, backed by the blue waters of the Mediterranean, stands, in solemn grandeur, the one surviving temple of all the great monuments of this once flourishing city. The ground rises abruptly behind the plain, forming two ridges of considerable elevation, the one on the north being the ancient citadel, and the other to the north-east of it known as the rock of Athene, the sides of which were at one time so precipitous as to be accessible only at one point. The citadel was connected by a covered bridge, spanning the small river Acragas, with the city itself, and was reputed to be so strong, owing to its natural position, that two men were sufficient to stay the progress of a whole army. The rock on which the citadel is built was pierced with a labyrinth of passages, probably used for sallying purposes. Many of these are still in existence, but they present no features of interest. It is to the ruined temples and the circle of the city walls that we must turn to appreciate the grandeur of the Agrigentines. To the architect they offer special opportunities for studying that phase of the Doric order which is in advance of its earliest prototype at Corinth, showing indications of that refinement and delicacy of treatment which culminated during the century in the unrivalled Parthenon. Those who are familiar with the most perfect works of the Athenians in the time of Pericles will perceive a crudeness and monotony of design in nearly all the Greek remains throughout Sicily, and especially at Acragas. This may be accounted for by the fact that the Dorians worked very much by tradition, and, with the exception of the great Temple of Jupiter Olympius, there is no instance of much variation in the arrangement of parts and definite proportions that distinguished all their public edifices. The entasis of the shaft, and its height in relation to the diameter, vary in each locality, but the same entasis, and almost the same relative proportions, are to be found in all the temples in each locality. At Corinth, for instance, the proportion of the shaft to the diameter is less than $4\frac{1}{2}$ to 1, at Acragas more than $4\frac{3}{4}$ to 1, and at Athens $5\frac{3}{4}$ to 1. Again, the entasis at Acragas is considerable, at Pæstum and Corinth still more so, and at the Parthenon it is so delicate and the lines of curvature are so subtle as to be scarcely perceptible. This has been beautifully elucidated by Mr. Penrose. From the proportions of the Temple of Concord here, which, like the Theseum at Athens, owes its preservation to having been converted into a Christian church in the Middle Ages, we are therefore able to ascertain the proportions of other temples that are in less perfect condition; and it was by acting on this principle that the late Professor Cockerell was able to work out a restoration of the colossal Temple of Jupiter Olympius. With the exception of the Theseum, there is no building so perfect as this Temple of Concord. It therefore affords an admirable study of Greek construction, and is in itself a most beautiful example of a hexastyle peripteral temple of pure Doric. Amongst the ruins the eye clearly discerns the one remaining shaft of the great Temple of Hercules, a line of columns that marks the once graceful temple of Juno Lucinia, and the picturesque group of four shafts with complete entablature that have been set up in recent times to show the proportions of the beautiful structure presumed to have been dedicated to Castor and Pollux.

It is, perhaps, to the colossal remains of the edifice raised to the glorification of the Olympian

Zeus that one must turn to comprehend the grandeur of the Agrigentines. Its dimensions are so well known, through the admirable drawings of the late Professor Cockerell, that I need not repeat them here. It is sufficient to state that the plan of this structure and the arrangement of the parts are easily traced in this wilderness of stone, and that the one gigantic Telamon, the sole survivor of all the heroic figures that once graced the walls of the cella, still lies prostrate on the turf, his huge placid face turned upward to the sky. The chief peculiarities of this building, variations from the ordinary type of Doric temples, are, — the attachment of the shafts to the external walls; the septastyle arrangement of the east and west porticos; the employment of figures to support the roof; and the introduction for the first time of bases to the shafts. The wonder excited by the magnitude of these remains is only equalled by admiration of the daring of the conception. Diodorus the Sicilian, nearly 400 years after the siege by the Carthagenians, says, "The grandeur and height of its porticos are stupendous. They are embellished with excellent sculpture; on the east is a representation of the Contest of the Giants, and on the west the Siege of Troy, in which each hero may be distinguished by characteristic form and dress." When the Agrigentines were preparing the roof the enemy was at their gates, and consequently this magnificent temple, which was to be the glory of Acragas and a rival of the great works that were crowning the Acropolis at Athens, was never finished. The last of the Telamones fell down A.D. 1401, but long previously the greater part of the edifice, having no constructional ties, had fallen down, much of it crushed by its own weight. Of sculpture there is hardly any trace. The scarcity of sculptured fragments may be accounted for by the walls having fallen outwards, and as the material was used for the construction of a mole and landing-place at the port of Empedocles, about three miles distant, it is reasonable to assume that the stones in the tympana, where the sculpture was, having fallen farthest from the structure, would be more detached and more easy of transport. It is to be regretted that the late King of Naples, who favoured some excavations here in 1804, did not authorise the removal to a museum of the one remaining Telamon from this "Palace of Giants." Having been built up with the masonry in twelve courses, each rather more than 2 ft. thick, the stones could have been easily removed and set up again. They would have formed an interesting and enduring relic of the largest constructional sculpture ever employed in a Greek temple.

The soft nature of the stone quarried at Acragas, a yellowish-brown sandstone, presented a difficulty to the architect wherever sharp arisses or smooth surfaces for the application of colour were required, of which there is abundant evidence. This was overcome by a coating of very thin white plaster, of extreme hardness, having all the appearance of marble.

The circuit of the city walls can be easily traced, especially on the south and south-east sides. It is difficult, however, to accept the statement of Diodorus, that they were 25 cubits high, because two of the temples which stand close to the enclosure would have been completely screened by so lofty a wall, an arrangement for which, I believe, there is no precedent. Diodorus probably meant the scarp of the rock, which would have been, in some parts, of this dimension. There are but few traces of the tombs that were once scattered over the great plain below the walls. Some of these sepulchral monuments must have been remarkable, as they were erected in memory of favourite horses, for the breed of which Acragas was renowned, of domestic animals, and even of birds. The so-called tomb of Theron the Despot is a conspicuous object from the walls. It has an attic base, with fluted columns at the angles, Corinthian capitals, and a Doric entablature. It is a work of later times, and is the only structure bearing evidence of the Roman occupation.

There is not much of interest in modern Girgenti. In the walls of the church dedicated to S. Maria dei Greci may be seen two Doric columns of the temple of Zeus Polias that once stood here, and in the cathedral, an impressive but unattractive work of the fourteenth century, there is a Græco-Roman sarcophagus, much prized by the inhabitants. There is also a remarkable collection of archives, and among them is a letter said to be written by the devil himself. The origin of the legend is probably connected in some way with the commerce of the town, which is principally in sulphur.

ALEX. GRAHAM.

THE FORTHCOMING PARIS *SALON*.

WHATEVER grounds there may be for complaint on the part of the labouring classes in Paris, the Parisian artists, at the present moment, have certainly no reason to quarrel at the want of interest in their pursuits. But artists,—that is, those who are really entitled to respect,—have never been loud in their howl, although somehow, nearly at all times just as now, an impression exists in England, in nearly all circles, that our artistic friends are either "rolling in wealth," or sadly in want of that kind of appreciative patronage which, by a pleasant fiction, it is supposed they all deserve. It must be admitted there are a great many people who are willing to pay artists very large sums for pictures that they fully expect may some day realise 50 per cent. at Christie's, and an equally large number of persons who are willing to give, in pure kindness it is to be hoped, very small sums for works of art that have very often a highly decorative character, and which are obtained at a sacrifice of only a small amount of capital. In France, at some price, sometimes very high, all pictures seem to find ready purchasers; the shopkeeper or the small man of property, as much as the prince or the millionaire, being desirous to see his whole house, but especially his living-rooms, crowded with works of art. Probably in no country in the world have the frame-makers and the gold-beaters so large a patronage; but just now the Parisian frame-makers are overwhelmed with work in getting ready the frames of the hard on ten thousand pictures that are likely to be submitted for exhibition at the forthcoming *Salon*.

A custom exists in Paris, unlike any that we have in London, of exhibiting a selection of pictures intended for the *Salon* at some club or society interested,—as all societies are interested in Paris,—in art; and at these club exhibitions can be seen during February and March a very representative set of the pictures, mostly of the smaller kind, that are expected to be points of attraction at the Palais de l'Industrie.

From what we have seen of these exhibitions we gather that there will be this year no excess on former years with regard to what we understand in London as "impressionism," but an excess perhaps in the attempt to paint with speed and celerity that appears to possess just now a peculiar charm with all young painters. We cannot for a moment suppose that an educated art-public can like such work, although a very small acquaintance with the methods of painting seems to convince the critic that over-manipulation is equally a mistake.

The pictures for the forthcoming *Salon* appear to promise, indeed, very little that is new; the old, old stories that have been told again and again are likely to be repeated, startling effects of colour and indecent exposures of ill-shaped feminine humanity, ambitious efforts to make a momentary name, and a few, a very few industrious efforts for the *Prix du Salon*. However active and sanguine the new race of artists that now crowd Paris may be of their prospects at this year's forthcoming Exhibition, the older artists, those whose fame and credit have for some years been well established, and whose names are familiar to the world at large, are not disposed to regard the expectations of their younger brethren with quite so much of their youthful complacency. Whenever the opportunity occurs,—and in the Paris Press scarcely a day passes without some thoughtful reflections relating to the fine arts,—an opinion is visibly evident of doubt whether the new school, as it may be called, can with any stability hold its own against the traditions that have existed so long. One thing is certain, this year's *Salon* will be more than ever alive with the fresh emanations of these younger men; it will exhibit fewer of the works of what may be called the older masters. They are unquestionably much disaffected, and enjoying as they do exceedingly comfortable social positions, and surrounded by affectionate friends and appreciative admirers, it is difficult for them to sympathise with showy men, greedy for fame and its rewards, and who in the opinion of their elders have done but little to deserve the position they claim to hold.

The blow that Classic art has of late years received in Paris is not by any means a nove attack. We all know how long the war against the Classicists has been waging, especially in Paris, nor is it likely that it should be very hotly contested now that the remaining warriors are so aged as those few are who still remain, and one of whom departed only the other day in Henri Lehmann. Still, in spite of the small popularity that is awarded to his style of art, at his sale a few days since, in Paris, the eagerness to possess some scrap of the very abundant surroundings that he left behind him was strikingly manifested.

There seems, in fact, from all we see and hear, a very small possibility of Parisian art this year gaining much ground, and when we think that this may be safely asserted at a time when many of their most eminent writers and thinkers on the subject are drawing attention to the advances that other countries are making, it is not a little significant and suggestive of reflection, the reflection, we think, irresistibly leading to the conclusion that this decadence, for it really may be called such, is owing to the disrespect shown by the younger artists to the established and ancient modes of study, and to the fatal error of endeavouring, unaided by study, to produce in the shortest possible time the effects of mature labour.

The representants of idealism and idyllism, of impressionism, classicism, Fortunyism, naturalism, orientation, modernism, and all the other styles are likely, from what we see, to be, if not fairly or well, at least in some way represented; but there appears to be a chance of a severe protest being made against the very objectionable character of the works of some of these so-called schools of art. It has become a sad feature in the new movement, if it deserves the dignity of being credited with action, that it has the effect of causing the more thoughtful and accomplished artists to retire, not from the contest, of which they are in no way afraid, but rather from the contact with men whose aims are so clearly associated with a gross desire for popularity, and although in England we can point to at least one artist who seeks the kind of popularity that is so offensive in Paris, in Paris at the present moment, and very likely it will be found in the coming *Salon*, the belief in popularity is the rule, and not, as it is with us, the exception.

Judging by the pictures that we have already seen, and that are likely to be exhibited at the forthcoming show in May, we find it impossible not to acknowledge the very great pleasure we have derived from the works of the new school, wherever such works have been executed by men of decided ability,—the kind of ability, that is, which asserts itself at once, and which appears, in the hands of the youngest artists, to carry with it a charm that appeals to us all. Even hasty work with such men may be charming, just as surely as the hasty work of the thoughtless, uninformed painter, the conceited and the vain artist, is simply disgusting. Of this latter kind of work the forthcoming *Salon* is likely to be prolific; of the former, the instances promise to be rare and far between; for we cannot hope, with such a feeling as now exists in Paris amongst the painters, to see at the *Salon* this year any work by the true veterans, the old guard, such men as Meissonier, Gerôme, or perhaps even Cabanel, and their places are but ill filled by the new men, even if we could allow ourselves to mention popular men whose names are well known in French society.

Again, we suspect that this year will show in Paris the foreign artist, not alone those abroad, but the large contingent which crowds every *atelier* in the Quartiers Latin or Clichy, the Ternes or the Parc Monceau, busily striving with just and well-directed ambition to make a mark in the great city of art that appears to be attracting more than ever the dreamers from all parts of the world.

As usual in the beautiful garden in the centre of the Palais de l'Industrie, we are certain o see an abundance of sculpture, and, as usual, we shall hear that in respect of sculpture, the French artists are pre-eminent, and in this view we are disposed to agree.

We have seen so far little or nothing of what French architects are preparing for the coming *Salon*, but we may expect, as usual, that this portion of the exhibition will be more than ever interesting, because we have found for some years past that a growing attention and more watchfulness of the architects' interests are noticeable at the French Exhibition; and

very attractive, therefore, is this portion of the *Salon* yearly becoming, as this department certainly would not fail to become at the Royal Academy if the architects had more space at their command.

ARCHÆOLOGICAL RESEARCH.

WITH the lengthening days come rumours of preparation from the numberless field clubs and archæological societies, who are preparing for the summer campaign. There will be much pleasant picnicking in picturesque spots, and there will be a deal of enthusiasm evoked in out-of-the-way nooks over some relics of the past, but there will, we are afraid, be but little added to our store of knowledge, or to the dissemination of a true appreciation of the lessons left us by our fathers. There are many who are interested in archæological lore who are looking forward somewhat anxiously to the publication of the veteran Mr. Roach Smith's "Retrospections," which is now passing through the press. This still active antiquary lives in sight of Rochester Castle, beneath the shadow of which Pickwick and his friends stopped the first night of their excursion, which was rewarded by the finding of the famous inscription, "Bill Stumps, his mark." There is a great change in the tone of public opinion since that publication, and Mr. Smith's "Retrospections" will not only show the difficulties which stood in the way of the establishment of the British Archæological Association, and the jealousies which arose in consequence, but it will show how one lifetime bridges over an age of research and discovery. The implied sneer has become an approving smile, and instead of being an object of ridicule, archæological research has become, alas! a popular pastime. More than a century and a half has passed since the observant, accurate, but often mistaken Dr. Stukeley, published his "Iter Curiosum," and we are indebted to him and the giants who followed him for much of the groundwork which will have to be utilised when the newer history of our land and our people comes to be written.

The new-born zeal for archæological research which is developing itself through the medium of the county and local societies requires to be kept in check somewhat by the older and more sedate associations, for there is great danger of priceless relics being destroyed, and still greater danger of ignorant self-sufficiency being perpetuated and scattered abroad. When we hear of the story of the Trojan Brutus gravely put forward as a veritable piece of British history by one who has done much for the preservation of the archæological remains of the Western land, and listen to a fervid description of the mutilated effigy of a Mediæval knight as one of the kings of the Saxon heptarchy, by the secretary of an important society, we ask who is to stop this admixture of tradition with fact, before both are discredited? These societies are full of ardent students and diligent observers, who, if properly directed, might collect much valuable information, which would enable the historian to correct many misconceptions, and remove from the historic fact that rust and moss with which local gossip has enveloped it, and which have been perpetuated through the medium of a possibly imperfect county history. Thus local knowledge may be added to the sum of the national history when it comes to be generalised, and will possibly clear away many a perplexing point in the studies of those who have devoted a lifetime to the records of the past. This cannot be done by gregarious parties. It must be done quietly and systematically, and the larger gatherings should be devoted to elucidating and comparing the facts thus laboriously gathered together. If this were so, and the pleasure-party left a little in the background, we should have more real work done, and many reproaches removed. In the newer light which has been shed on the prehistoric remains which stud alike upland and plain, field and woodland of our country, it is found that little can be gleaned in bright summer weather. It is when the woods are clear of leaves and undergrowth, and the open ploughed fields show their variety of tint, that the signs of by-gone habitations can be best observed. The hoar-frost will frequently reveal buried foundations by showing a ground-plan liberally on the old turf. The slanting beams of a winter's sun will frequently reveal the outlines of an entrenchment which would otherwise be invisible. These are not seen by crowds. They are only revealed to the close observer, and thus the sites of the cities of the past or the by-gone villas become known. The wildest and most unpromising district is frequently the richest in these remains, and rewards the explorer with a fresh chapter of unwritten history.

It has been thought that the lines of archæological research have been narrowed too much, and that we too often find the details of one class of building utilised for another intended for quite a different purpose; the spirit of the old architect has been lost in the servile copying of his details. He adapted his means to a given end, and, before the tide of restoration obliterated so many fine points, a humble village church was found worthy of attentive study by those who wished to become true architects. By bringing these details before a wide circle of readers and students who have neither time nor means to visit the originals we have been of service, and have preserved the memory of many an epic in stone which otherwise would have been but a phantom in the future.

The rage for old oak furniture has been the means of perpetrating cruel injuries on the remains of our household fittings and adornments. The *outré* decorations of the famous cottage of the Ladies of Llangollen, where linen-chests and rood-screens have been combined indiscriminately with bedsteads to form the oak panelling of the rooms is only an instance, on a large scale, of what is occurring every day. Old mansions are stripped of their cornices and fireplaces to form sideboards and Elizabethan cupboards, without much regard to unity of design or their adaptability for the purpose. Thus we find chairs of ecclesiastical design side by side with hybrid cabinets and questionable bedsteads. There is something now being done to remedy this. The labours of the Rev. T. F. Havergal, of Hereford, have thrown much light on chairs and settles, their uses and their history. Attempts have been made to collect the examples of simple furniture shown in our missals and illuminated manuscripts. The manuals of art-furniture which have been issued in this æsthetic age have been more remarkable for their modern carpentry and upholstery than for their taste, unity, and adaptability for the purpose for which they are designed. The peculiarities of workmanship have been ignored by the manufacturers. The examples at South Kensington have been travestied too often, whilst the many excellent examples which are yet preserved in many of our old mansions are scarcely looked at, even by archæological enthusiasts. If these examples were fairly sketched, and the various articles of domestic use described, we might find that the ingenuity of some of our inventors had been anticipated by a more simple contrivance. If our local archæologists did this they would be doing a good service in the coming season, and make their labours valuable to the country and to all lovers of what is true in art in the half-forgotten past.

THE BUILDING TRADE IN PARIS.

THE daily papers of late have kept the public well acquainted with the action of a large body of the working classes in Paris. Suicidal as has been this action, it is impossible for those familiar in any way with the true bearings of the case not to feel the large element of justice that there is in many of the complaints uttered, not so much by the noisy rioters of the last few days, as by the large section of the community they profess to represent. Foreign competition has been playing great havoc of late years with French industry, and though to the eye of the visitor to Paris the activity of the building trade would seem to be apparent, complaints have arisen as to the results of the stoppage of the more important building enterprises. But foreign competition is, we repeat, the chief grievance. Sweden and Norway, say the men, send to France doors and windows ready made, and at extraordinarily cheap rates, and hence French workmen remain idle while foreign markets are active.

But, on the other side, if the workmen have causes for complaint, so have the masters, and their views in the riots of the last few days have remained unexpressed. The masters base their complaints,—first, on the want of political stability, the numerous changes of Ministry that have taken place within the last few months; secondly, the desire for financial speculation which has invaded all classes; thirdly, the high rate of wages; and fourthly, foreign competition.

Of these, the want of political stability is universally set down by all employers of labour as the most disastrous to the prosperity of the community, and English readers can thoroughly understand this point. The menaces of the revolutionaries within the past few days are scarcely of a character, we are afraid, to calm this feeling of uncertainty which so fatally affects French industry, and leads capitalists to seek abroad an investment for their funds. The chief sufferers from this state of affairs are those employed in the building and kindred trades.

Against the rash speculation of the last few years the employers of labour are equally severe in their condemnation; for the capital which should be engaged in genuine industry is thus merely enriching an ephemeral series of risky and, in most cases, entirely dishonest speculations, while an unwholesome tone pervades the society afflicted by the desire for the false gains thus obtained. There are whole neighbourhoods in Paris urgently requiring, in the interests of hygiene, to be demolished and rebuilt; but the occupation of capital in other directions arrests this profitable and practical mode of investment. Here again the building trade is one of the chief sufferers.

As for the question of wages, the masters are unanimous in complaining of their high rate. Here it would appear that the action of the Municipal Council,—which, as we have more than once in these columns explained, fixes from time to time the price of work,—has greatly complicated matters. For many years the prices of the official *Série* were taken only as an approximative basis in the calculation of contracts, but now it would appear the prices of the *Série* are regarded by the men as the minimum of what they are to receive; the Municipality naturally pays its men at its own rates, and the rest of the trade have now to pay the same wages. From the provinces, however, the official rates not prevailing and labour being therefore cheaper, work is sent in to town, especially carpentry, at 15 to 20 per cent. cheaper than it can be produced in Paris. As for foreign countries, they are able to compete even more advantageously; as a striking instance, it would appear that the whole work of fitting up the French annexe at the forthcoming Amsterdam Exhibition has been placed in the hands of a Belgian firm, the French Commission having to consult their purse quite as much as their patriotism.

The increase of pay, which has been one of the results of the interference of municipal action in the question of the wages of Parisian workmen, has not, so the masters assert, in any way improved the condition of the men, for, with the increase of wages, it is proved that there are fewer hours of work; and here again the sad question of intemperance plays an important part; for it is the *marchand de vin* who has been the chief gainer by the recent changes. Even in sober France the cry against the wine-shop is beginning to make itself heard.

With regard to foreign competition, it is Sweden and Norway, it would seem, who are the most formidable rivals, sending into France the greater portion of the doors and windows employed in the buildings in the new neighbourhoods of Paris. Such was the cheapness of the Scandinavian work that when it first made its appearance at the frontier custom-houses,—where it pays a duty of 10 per cent.—the officials were convinced that an attempt at imposition had been made, and the goods were valued by experts. It was then found that a two-panelled door, which could not be turned out in Paris for less than 13 francs, could be supplied by the Norwegians at about 7 francs.

The masters, however, in face of this extraordinary competition, urge that could France only enjoy complete political stability, they could still resist the cheapness of foreign work, basing their views on the fact that the mechanical arrangements for the production of the goods sent from the North being alone capable of turning out a uniform class of goods, any changes or diversities of type would immediately render such goods useless for the Parisian market. In the new neighbourhood of Paris, the fittings of most of the houses have of late been of a uniform character,—a feature unusual, it may be observed, with our neigh-

bours, and only introduced since house-building has been in the hands of a series of companies which for economy have erected large blocks of uniform buildings. When, however, a house or series of houses is erected by private initiative, individual taste enters into the matter, and machine-made goods become useless. Now, in Paris private enterprise in architectural directions is active, and is invariably interested in seeing that it is supplied with artistic work; hence, in spite of an apparent uniformity in some quarters, individuality is shown in much of the modern architecture of the French capital. Under these conditions, peculiar to the French investor in house property, the masters urge that they have no reason to fear foreign competition when its cheapness is the result of the use of machinery. The caprice, the fancy, of their employers will, the French masters argue, always ensure the success of home-made products. All, in fact, that the masters require at the present moment is the cessation of unwholesome speculation, and a greater stability in their political governors.

PRIVATE BILL LEGISLATION.

THE discussion on the 6th instant in the House of Commons on Private Bill Legislation was one of considerable interest and importance, but is unlikely to bear practical fruit. The House passed a resolution that inquiry into the matter was desirable in 1872, and at various other periods the subject has engaged the attention of the House of Commons. But things were the same in 1882 as in 1872, and we shall be surprised if the changes which may have occurred by 1892 will have altered matters much from what they are at the present time. The main proposal to have migratory commissions in various parts of England is one which, though there is a good deal to be said for it, yet after all would be a very doubtful change for the better. No doubt inquiries before committees in London are very expensive, but is there any reason to suppose that local inquiries would be cheaper? Professional witnesses and advisers would very largely be London men, and the cost of their travelling and sojourning in some local town would quite make up for any saving in the expenses of local witnesses. Moreover, it is probable that when engineers and surveyors and other professional persons were engaged at a distance from their offices they would make a higher charge for their services than they do at present. Of course, we do not assert that all professional men come from London, but what we desire to point out is that in most inquiries a large proportion, at any rate, of them do, and that the extra cost of bringing them to particular localities at different times of the year would largely balance a saving in the cost of local witnesses and managers.

One of the dangers of the present system seems to be that the number of members able to serve on committees is scarcely up to the requirements of the work. It has always appeared to us that one absurdity and cause of expense in connexion with Parliamentary inquiries is that Bills must go through committees of both Houses. It was proposed the other evening that there should be an appeal from the decisions of the migratory commissions to some Parliamentary tribunal. This would undoubtedly be a source of fresh expense, but, at any rate, it is a logical step in harmony with ordinary legal procedure. But after a Bill has passed a searching examination in the Commons, for it to go through the same process in the Lords, and *vice versâ*, seems to be not only an anomaly which is not necessarily a fault, but an anomaly of an unreasonable kind which is of no real benefit to the community. For it is not an appeal from a lower to a higher tribunal, from one composed of inferior judges to one composed of superior judges, but it is an appeal from equals to equals, and not seldom from superiors to inferiors. No better example exists than the case of the Riverside Fishmarket Bill of last session, which, after being inquired into and passed by a good committee in the Commons, was mutilated by an inferior committee in the Lords. The reasonable practice would obviously be to have joint committees of both houses. This would ensure a large saving of expense, and would increase the number of members available for committees, because what may now be termed the appeal committees would be committees of first instance. It would also be a change of considerable political importance, since it would bring members of the two Houses into closer contact, and this relationship would probably cause members of both Houses to be better acquainted when disagreement on political questions arose between them. The advantage of such a change as this is that it is essentially practical and feasible, and would cause economy without any great change of the existing procedure. We regard the possibility of largely cheapening Parliamentary litigation as very slight. It is certain that as long as wealthy corporations and undertakers are the chief parties, so long will the contests be expensive. It is notorious that railway companies give larger fees in ordinary litigation than private persons, and the same principle, or rather practice, is only carried to a still greater excess in the Committee-rooms. Certainly, then, we do not expect to see the proposal that there shall be migratory commissions carried out, and the scheme of provisional orders is one which can never give the public the same confidence as the present system, expensive and unsatisfactory as it often is. Reforms are clearly needed, but those that are feasible must be carried out on existing lines.

THE NEW OPERA, "HENRY VIII."

IF the works of our English composers cannot, as is unfortunately the case, be said to take a very conspicuous place among the great operatic creations of this century, English history and romance have supplied some most successful subjects to the foreign librettists. The new opera, "Henry VIII.," produced a few days since in Paris, at M. Garnier's grand new opera-house, may be said to form an important addition to an already lengthy list. For many months past no small interest has been excited in artistic circles by the promise of the forthcoming novelty. A new opera is an event of no small importance, and especially a composition dealing with a subject as historical as that of Henry's famous divorce of Catherine of Aragon, and his marriage with Anne Boleyn, and the many circumstances,—so weighty in the history of England,—which attended that step of the first Defender of the Faith. The libretto had, in fact, been offered to more than one eminent composer before M. de Saint-Saens accepted the onerous task. Gounod declined, we believe, on the score of his inability to be tied down to time, yet, with a true artist's absence of jealousy, he assisted in every way the production of the work of his brother musician. This production has, as may be imagined, been the result of no small amount of research. The Paris Opera-house prides itself, and with no small reason, on the "mounting" of its operas, and its superiority in this respect over all the great Continental opera-houses.

"Henry VIII." was a suggestive field for scenic effect and brilliant costumes. For months past research has been made in the various sources of reference, not alone in France, but in England. M. Lacoste, attached permanently to the Opera-house, specially visited England some months since, with a view to obtaining all the information possible respecting the costumes and details of the piece. Windsor has been ransacked, the Hampton Court gallery having supplied a large number of sketches, particularly the invaluable series of contemporary pictures which hang in the room known, if we mistake not, as Queen Anne's Audience Chamber, and representing a number of incidents of Henry's reign. Holbein, as a matter of fact, however, was able to supply amply all the necessary information, and it is a living series of many of Holbein's originals that move through the scenes of M. de Saint-Saens' opera. *Henry VIII.*, with his British red beard and hair and burly bluffness, is, in the hands of M. Lasalle, apart from his artistic rendering of the part, a striking representation of the popular and energetic sovereign who made us a Protestant nation, while *Catherine of Aragon* (Mme. Krauss), the refined *Catherine* of Shakspeare, and *Anne Boleyn*, in her French costume, fresh from the court of the Valois, with their maids of honour, and (easily recognised), the scarlet-costumed *Lord Surrey* of the Hampton Court picture, suggest that the famous originals have stepped from their frames.

Moving in scenes almost all architectural, representations of Westminster, of Richmond, and of Kimbolton Castle, the effects produced are, it cannot be denied, singularly interesting. The great scene of the Parliament held in Westminster Hall, crowded with peers, temporal and spiritual, the Archbishop of Canterbury and the Cardinal Legate, both in full canonicals, the king on his throne, and surrounded by his suite and the various officials of the house, is a scene of great impressiveness as a tableau, apart from its dramatic and musical interest connected with the incident of Catherine's public divorce and Henry's open schism with the Church of Rome,—all, of course, largely suggested by Shakspeare.

Exception might be taken to the apparent vastness of the garden scene at Richmond, with its long vistas, resembling somewhat too closely the later splendours of Versailles, and there is scarcely a word to be said in favour of the very lengthy "Highlanders' ballet" introduced into this act, for M. De Saint-Saens has not been able, like Herr Wagner, to fight against the subscribers' demand for a ballet of the old-fashioned type, though why, we ask, a Scotch ballet before Henry VIII.? Into this ballet the composer has introduced a very copious selection of old English airs, commencing with the "Miller of the Dee," and concluding with a *pas seul* danced to the air of "Haste to the Wedding," the effect of which on the first night was very singular to the English ear.

Certainly, the last scene at Kimbolton Castle,—where Catherine died,—is architecturally very fine, the monumental mantelpiece, somewhat resembling the famous mantelpiece at Bruges, probably being a copy of the original. As for the dramatic action of this portion of the opera, it, like the great Parliament scene, is largely suggested by Shakspeare, and the composer has been well inspired by his theme; for the grandiose finale of this act, and its well-merited reception, would alone have sufficed to save the opera, had even the rest of the work pleased less.

A success has been undoubtedly scored for the French school, and the Paris "Academy of Music," not too generous in the novelties it has of late presented to the public. The composer, while largely profiting by the modern movement towards greater unity between the dramatic action and the musical composition, has not so entirely broken with the old traditions as to offend the many who still express their satisfaction with the old method. If the libretto taken by itself is in parts deficient, the opera has many beautiful airs, which, as repetition renders them more familiar, will soon become favourites with the musical world. As for the interpretation, only praise can be awarded to M. Lasalle as *Henry*, to Madame Krauss as *Catherine*, and Mdlle. Richard as *Anne Boleyn*. It is sincerely to be hoped that the London public may, before long, be able to enjoy the treat of hearing the new opera, the subject of which, apart from its merit as a composition will, of course, largely recommend the work.

THE WORKS AT PARKESTON.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE members of the Civil and Mechanical Engineers' Society of London visited Parkeston on the 8th inst., for the purpose of inspecting the extensive works which have been carried out there by the Great Eastern Railway Company, for the accommodation of the enormous Continental traffic with which they have now to cope. The party consisted of the president of the society, Mr. R. H. Twigg; the vice-presidents, Mr. T. Cole and Mr. H. Sandall; the hon. secretary, Mr. G. A Pryce-Cuxson, and Mr. A. T. Walmisley, Mr. H. M. Whitley, Mr. E. H. G. Brewster, Mr. H. Valpy, Mr. G. C. Child, Mr. B. Haughton, Mr. W. L. Beardmore, Mr. G. R. W. Wilcocks, and Mr. D. Laing. They were accompanied by Mr. J. S. Macintyre (of the firm of Edward Wilson & Co., Westminster), the engineer, from whose plans and under whose personal superintendence the important works have been carried out. The visitors were conducted over the works by Mr. Macintyre. The great attraction, from a professional point of view, was, of course, the extensive landing-stage or quay, an immense platform, 1,800 ft. long by 100 ft. wide. The construction of this quay was pronounced a great achievement. It is built wholly upon piles, and stands upon what was formerly the river-bed. The front is protected by a concrete wall, extending the whole length of the quay, and averaging

between 16 ft. and 17 ft. in thickness and 40 ft. in height. By means of mechanical contrivances the bed of the river was excavated until a solid foundation was obtained. As the excavation proceeded massive concrete cylinders, measuring 6 ft. in internal, and 9 ft. in external, diameter, were inserted until a double row was secured from one end of the quay to the other. The spaces between the cylinders were excavated and filled in with concrete until a solid wall of the dimensions we have mentioned was formed. This is now as firm as granite, and will withstand the action of the waves for centuries. The quay is built upon iron girders, with wooden cross-beams, and carries five or six lines of rails, for the conveyance of luggage and heavy goods from the steamers to the warehouses, or *vice versâ*. We may here mention that Parkeston is about one mile further up the Stour than the old quay at Harwich; but as vessels will have a straight run in, the time spent in turning will be saved, so that passengers will be landed quite as quickly as at present. The quay affords berths for seven steamships, with a depth of water of 27 ft. 6 in. at high tide, and 16 ft. at low tide. It will be fitted with hydraulic cranes, capstans, and other machinery of the most approved modern type. Very extensive sidings have been arranged on the gridiron principle, for sorting and marshalling trains. These sidings are, in all, about five miles in length.

The station building has been arranged somewhat on the Continental plan,—a large central booking-hall, with second-class waiting-rooms, ladies' rooms and lavatories to the left, and similar rooms to the right for first-class passengers. Each of the waiting-rooms has a refreshment buffet attached, and will be fitted with couches and other appliances for the comfort of passengers landing after a sea voyage. They are lofty rooms, well lighted and ventilated, and when completely furnished will be extremely handsome. A large hotel has also been erected in connexion with the station. The building is in the Italian style of architecture. Boyle's patent ventilators have been fitted to each room. The lavatories in the hotel and in the station are supplied with hot and cold water upon an improved system. The arrangements for heating the building have been carried out according to the recommendations of Captain Shaw, of the London Fire Brigade. The corridors of the hotel are composed of solid concrete upon iron girders.

The quay is lighted at night by electricity on the arc system; and the hotel and offices will be lighted with the Swan incandescent lamps supplied from accumulators.

The works have been three years in progress, and will cost, when completed, about half a million of money. The company have acquired a large quantity of land, and are prepared to build houses for the accommodation of their servants, so that Parkeston, which has, so to speak, sprung up out of the sea, is likely to become an important town in the course of a few years.

The engineer of the works, as we have said, was Mr. J. S. Macintyre. The Horsley Iron Company were the contractors for the iron quay; the concrete wall in front of the quay was erected by Messrs. J. Cochrane & Sons, of London. The contractor for the railway and embankments was Mr. Thomas D. Ridley, of Middlesbrough. The buildings and hotel were the work of Messrs. Bennett Bros., of Downham Market.

Parkeston was opened for passenger traffic on the 15th inst.

The party afterwards went over a steamship taking in cargo, and afterwards dined together.

Association of Municipal and Sanitary Engineers and Surveyors.—The Lancashire and Cheshire District Meeting is to be held at Rochdale on this Friday, the 16th inst., when a paper on "The Ventilation of Sewers and House-drains," by Mr. R. Read, City Surveyor, Gloucester, will be read and discussed. The works to be inspected are:—1. Manure works, under the leadership of Mr. Alderman Taylor, chairman of the Health Committee; 2, gas works, under the leadership of Mr. T. B. Ball, and a paper will be read on the "St. John's Purifying Apparatus, and the New Works for the Manufacture of Residual Products and the Distillation of Tar"; 3, the Rochdale tramways in process of laying: description by Mr. R. Vawser, C.E.; and 4, the timber-cutting works of Messrs. T. Robinson & Sons (Limited).

THE FEMALE SCHOOL OF ART.

H.R.H. PRINCESS BEATRICE performed what was stated to be her first public act by distributing the prizes to the successful students of this school on Saturday afternoon in the theatre of the University of London, Burlington-gardens, Regent-street. The Right Hon. A. J. Mundella, M.P., Vice-President of the Council, presided.

In the absence of Mr. Francis Bennoch, hon. sec., through ill-health, the Rev. Sir Æmilius Bayley read a statement detailing the work of the school. In the course of it it was said,—

"As regards former students, the committee are glad to perceive that the advantage of Schools of Art being brought into closer connexion with the various manufactures of the kingdom is becoming more generally recognised. There are already at work technical classes for wood-engraving in the Kennington Park-road, for wood-carving at the Albert Hall, besides many others as private adventures. The committee hope that every year many more such classes will be opened, so that students duly qualified may, on quitting the Schools of Art, attach themselves to such technical schools as will best enable them to acquire the necessary knowledge for the special manufacture they design to work for, instead of being left entirely to their own resources, and sometimes unable to surmount the various obstacles they have to encounter. Notwithstanding these difficulties, the committee are happy to learn that some of their former students have more commissions in porcelain painting, designing for Christmas cards, fan-painting, and other ornamental work, than they can personally accomplish, whilst others succeed so well in private teaching that they generously relinquish some portion for the benefit of their less fortunate sisters in art.

This school has been singularly fortunate, in possessing the great advantage of the kindly personal interest taken in it by her Majesty.

The Queen, by becoming its special patron twenty-three years ago, enabled it to surmount the many difficulties which then threatened its existence, and ever since that period her Majesty has graciously continued her valuable encouragement by founding a Scholarship, now happily raised to the value of 60*l.* per annum; by a special Gold Medal, annually given; by allowing a selection from the works of the successful competitors for these honours to be annually forwarded for her inspection, and her approbation has frequently been marked by her purchasing one or more of the works submitted, an honour which this year has again been conferred. Such patronage is highly appreciated by your committee, as it has ever proved to be a prime incentive to the students to achieve honour by striving to excel.

It is a notable and highly creditable fact that, with one or two exceptions, our staff of teachers has, without intermission, been connected with the school ever since its commencement, and the best proof of the efficiency of the system adopted and so ably conducted by Miss Gann and her assistants, Miss Wilson, Miss de la Belinaye, Miss Pocock, and Mrs. Overton, will be found in the ever-increasing number of prizes obtained by the students. Neither should it be forgotten that all this good and useful work is achieved by females, who are taught by females, all of whom have acquired their capacity for teaching in the school of which they are now the accomplished and successful instructors."

Mr. Mundella then addressed the assembly. He said he could have wished that her Royal Highness had done so instead of himself; for he was quite sure that one who was herself known in art, and whose family contained so many distinguished artists and persons who had done so much for the encouragement of art, would have instructed them much better in matters of art than they would be by anything he could say. He must congratulate the managers, teachers, and students of that school that the first public act of her Royal Highness was to distribute the prizes in connexion with it. That fact would be an encouragement to all the female schools of art throughout the country; and he was sure that the prizes awarded that day derived additional value from the fact that they had come from the hand of her Royal Highness. The history of that school was identified, and he thought co-incident, with the history of the Art Department with which he was associated as Vice-President of the Council. It was not till 1842 that the Government made a grant of 1,500*l.* a year for the establishment of certain schools of design controlled from Somerset House, and for some years that school received 500*l.* out of that grant. It was from the Great Exhibition of 1851 that art received its first great impulse in this century. Their industrial products at that time were such that, as he had often remarked, they might very well fill a chamber of horrors; and if they could only see them that day they would form an instructive illustration of the progress which had taken place since. The industrial art of this country owed a deep debt of gratitude to the wisdom, foresight, and culture of the late Prince Consort, on account of the impulse which they gave to it. That school stood fourth in the list of those which had been most successful in the national competitions. The three in advance of it were the Art Training School at South Kensington; the great school at Lambeth which had done so much for art as applied to pottery, and had created a new industry and a new employment in the district; and the school in the town with which he had been so long connected, which had derived incalculable benefit from it, the lace of Nottingham holding the first position among the machine-made lace of the whole world, mainly through its having maintained a good school of art. He was very glad to find that so much of the work done at the school in Queen-square belonged to industrial and decorative art; and when he saw the students come forward to receive prizes for their success in fan-painting, lace-designing, designs for wall-papers, the painting of tiles, dessert services, china, and pottery, and other things, he recognised the enormous value of that school to the students who attended it, and the great success which had attended the labours of Miss Gann and her able staff. After all, the real object of the Government grants was to encourage industrial art, not pictorial art. No doubt, success in the one led to success in the other, the most successful artists in the world having been originally industrial artists. He said this to encourage those who had turned their attention in the direction of industrial art. They must not think that industrial art was a lower or meaner grade of art than pictorial. The greatest men of the Italian Renaissance,—men whose names would live for ever,—had not been ashamed of designs for the decoration of objects of domestic comfort and enjoyment. From Orcagna down to the latest artists of the Italian Renaissance, almost everything domestic, from the painting of a plate to the designing of a fire-place, had been the work of great artists. Nor need he remind that assembly that some of the most distinguished artists of the last century, who made our manufactures famous, devoted their attention to industrial art, and that Flaxman, by applying his art to Wedgwood's beautiful manufactures, made them immortal. Industrial art was of great value, too, as opening up a larger field of employment for women. He was afraid that they were only at the beginning of that question in this country. In France,—in Paris especially,—thousands, perhaps he would not be wrong if he said tens of thousands, of women were engaged in industrial art, so vital was that branch of art as the means of enabling France to maintain her supremacy in her special industries. He held in his hand an announcement of a free school of design in Paris, similar to those which were to be found in every *arrondissement*, and he mentioned it to encourage the Goldsmiths' and other City Companies who had done so much for technical education to continue to discharge that important function. He found from the paper to which he alluded that in that new school of design for young persons everything was gratuitous; while the teaching included designs from the figure, painting in porcelain, lithography, wood-engraving, &c. Such things were taught to thousands of young people at the expense of the Municipality of Paris; and although he could hardly expect that the Municipality of London,—even the new Municipality which the Home Secretary hoped to create,—would devote any portion of the municipal taxes to art training, yet he did hope that those great companies which had existed for many centuries, and which had such an important connexion with our great industries, would be stimulated when they saw what was being done not only in France, but in Germany, in Austria, and throughout the Continent, to encourage art more than they had done in their own country. In conclusion, the right hon. gentleman said that he was glad to have found that many good teachers of art had been trained in that school.

Mr. Thomas Armstrong, Director for Art at South Kensington, in addressing the students, said,—When it was arranged that Mr. Mundella should come here to-day, I went to see Miss Gann's school for the first time, and I was able to report to him that I found it quite full of stu

dents working with a good spirit; that the arrangements for the economy of space and light were excellent; and that the school was, in its way, doing very well. This school is, I believe, a feeder to the Royal Academy, and many of the students aim at being painters of pictures. With them I need not concern myself much. We in the Department have rather to do with such as turn their attention to decorative or industrial art; for the painting of pictures is accidental, and not essential to our system. There are, I believe, more than enough painters of pictures, or, at any rate, there will be more than enough in a few years, unless there should be some sudden check to the increase. Even the cleverest among you will be none the worse as artists for giving some of your time and attention to the design and execution of decorative art. The greatest of the Italian artists of the Renaissance were ready to turn their hands to any kind of decoration, and I could give you some notable instances of distinguished English artists of our day who have done the same. I have not seen enough of such schools as yours to be able to form any opinion as to the best means of stimulating the students in the direction of industrial or decorative art; indeed, I have not seen any school like Miss Gann's in England. You all know that in the ordinary schools of art open to both sexes throughout the country the morning classes are mostly made up of girls who generally learn to paint flowers or landscapes in an amateurish sort of fashion. Sometimes, however, amateurs are very much in earnest. I visited the Edinburgh school last March, and found a room full of young ladies, who had come through driving snow and rain, to work from eight to ten in the morning. At Glasgow I was told that during the winter a class of girls, apprentices, I believe, attended from seven to nine in the morning, and worked by gaslight. Now, these girls were certainly very much in earnest, and if their energy could be turned into a proper channel much good should result to everybody. I may as well mention the interesting fact that in Edinburgh there is, or was, a dealer in designs of all kinds,—a middle-man between the manufacturer and the designer. I am not aware that any such trade is carried on in London, but it exists extensively and flourishes in Paris. It seems to me of the first importance that any outlets of this kind for the work of our students should be make known as widely as possible. Miss Gann tells me that many of her students,—most of them, I think,—come to work with the very serious purpose of qualifying themselves to earn a living, and I am sure that every one, both in the Department and outside it, from the gracious lady who has so kindly come here to-day, downwards, would wish to help them in this most laudable endeavour. For myself, I may say that I have not neglected any opportunities of acquiring information on this subject, and I hope I may see my way in time to some means of bringing the producer of designs and the consumer or dealer into closer contact. I have seen some fans done in the school, and Sir Philip Owen tells me that many of you do lithography and wood-engraving, and that designs of Christmas cards are produced by you in large numbers. All this work, if done well and in the true artist-spirit, is good for you, and will, perhaps, by-and-by enable you to paint pictures if you wish it, and have the talent to paint good ones. I should like to see some short course of Architecture made compulsory in our schools. Through it you would more easily get at the first principles of decoration, for all the decorative arts depend on architecture. I do not know that any such course is insisted on in the art schools for girls I have seen in France and Germany. But this teaching of architecture to girls even as part of general education is not altogether new in England, for in looking over some old drawings done about forty years ago in an ordinary ladies school as part of the general education by one of my sisters, for the most part useless pencil landscapes from flat examples, I came upon a set of carefully-tinted drawings of the architectural orders, with descriptions in writing on the margin. At the Industrial Art School (Kunstgewerbe Schule), of Munich, an admirably managed place, on inquiring if young men who were about to become painters of pictures were admitted, we were told that they were compelled to go through an architectural course, and when this rule was not deterrent it was thought right to admit the candidate, as he became through this architectural course in some manner qualified as a decorative artist. I will now tell you briefly what we saw at the girls' schools we visited last year, when I went with Mr. Bowler to visit and report on the industrial art schools in France and Germany. One afternoon while in Paris we visited a drawing-school for girls in the Rue de Seine. This school was founded in 1802, and was for some time under the direction of Mademoiselle Rosa Bonheur. The teaching is free, and students are admitted from twelve to twenty-five. It is kept up by the State. There were 140 girls present at that time, and 338 inscribed in the books. The hours of attendance are from ten to three. All the students sat rather closely packed in one low room, lighted from the roof, which was in ridges. Although they were rather close together, and it was not easy for the teachers to move about among them, they had room enough for their work, and each had a good view of the examples she was copying. We saw them drawing from four plants and four casts, ranged alternately on the same line. The plant at the end where the beginners were working was simple in its forms, while the succeeding one was more complex and difficult to draw. So with the casts, which ranged from simple geometrical reliefs to the Psyche (Naples). We saw some still-life paintings which were pretty good, and a great number of coloured designs which were excellent. Their best had been done in a competition, and we were told that the average attendance of the girls who had done the best designs (for a cup) was four years. We were told that the good designs were easily disposed of to manufacturers, but did not learn how this was done. On another day we went to inspect a girls' drawing school in the Rue du Vieux Columbier kept by Madame Thoret, called "une école libre." It receives from the Paris Municipality a subvention of 3,000 fr. annually, as well as the rent of the rooms, the cost of gas, and of a porter. For these considerations the school is bound to take twenty-five free students three days a week; actually there were fifty-five such students. Drawing only is taught on the days due to the State. There are lectures in perspective and anatomy; 160 girls on the books, 128 present. On the days not due to the State painting is taught. In Germany we saw only one school of industrial art for girls,—that at Munich. The brief note I made of it is not very favourable; but the works exhibited by the school at the Nuremberg Exhibition were not only well executed, but in some instances showed an amount of artistic feeling which was wanting in the work of the men in the same school. In conclusion, I would ask you not to be disheartened by anything I have said, for I have felt bound, from a sense of responsibility, to take the low ground of utility and expediency. You are clever enough, and if you will only be patient and industrious while submitting to discipline, and studying fine examples, you will produce good work which will be a source of satisfaction and pride to you, and probably of profit.

Sir P. Cunliffe Owen, Director of the South Kensington Museum, said he regarded it as a great privilege to be allowed to speak on that occasion in favour of the Female School of Art, with which he had been connected for the last twenty-five years. One of the strongest claims of the school to the support and encouragement of the public was that it was doing a great deal in the way of opening up fields of employment for women, and that was a cause which was eminently worthy of sympathy and help. Some of the ladies who had been pupils of the Female school of Art had lived to become honoured teachers in that and other schools of art, and there were many young women who were now earning an honourable and comfortable livelihood through the exercise of talents which they had acquired largely through the art-training given to them in that school. And they were really only at the commencement of what could be done in the same direction if only they could receive a helping hand. There were abundant opportunities for young women who had been educated in art principles and processes to turn their powers to good account, both for themselves and for the public. As an instance of what might be done in one direction, the speaker mentioned what had been done at Lambeth, where, through the work of the students of the local school of art, a new industry had, within the last ten years, been founded by the production of artistic pottery,—known and admired all the world over as "Doulton ware." That new art-industry, employing a large number of young women, was mainly the outcome of the teaching of the former able master of the Lambeth School of Art,—Mr. Sparkes, now the principal of the Art Training School at South Kensington. In another direction he hoped that the teaching of the Female School of Art would, in a few years, result in the employment of young women in large numbers in connexion with chromo-lithography, where artistic knowledge was of great importance to the successful carrying out of even the mechanical operations connected with the process. There were now many workmen earning 4*l.* or 5*l.* a week in doing work of this kind, which young women trained in the Female School of Art would be quite competent to perform. At present we were forced to go to Germany for the production of a great deal of work of that kind. These and many other circumstances augured well for the employment of young women in the future. Only a short time ago he was in the office of a Dumbarton ship-builder, who was employing young ladies in making drawings for the decoration of the interiors of his ships. There was also plenty of scope for the employment, in our large silk-mercers' establishments, of young women who had received artistic training, and who would be thereby qualified to advise ladies how to dress to the best advantage, and with due regard to complexion, figure, &c. Sir Philip Owen concluded by moving a vote of thanks to the president, vice-president, and senate of the University for the use of the hall.

The Bishop of Rochester, in moving a vote of thanks to the Princess for distributing the prizes, said the students felt rewarded and the teachers encouraged by the presence of one who was an artist in the sense that she was a lover of art. In the attendance of her Royal Highness they recognised the continued interest of the Queen in the prosperity of the school.

The Rev. Sir Æ. Bailey seconded the motion, and expressed the belief that but for the Royal patronage they had received, the school would never have been in existence at this time.

The resolution was carried by acclamation, and the proceedings terminated.

THE CHURCH AT KEW.

"I am his Highness' dog at Kew:
Pray tell me, sir, whose dog are you?"

Some alterations are about to be made in Kew parish church. It is proposed to take down the royal mausoleum and rebuild it further eastwards, so as to allow the addition to the church of a new chancel and sacrarium. At the same time a northern transept and a southern porch will be erected. These works are estimated to cost 5,000*l.*, the greater portion of which is already subscribed, the contributors including her Majesty, the Duke of Cambridge, the Duke and Duchess of Mecklenburgh-Strelitz, and the Princess Mary of Teck. Kew, so long associated with the domestic lives of King George III. and his family, would appear to have been an early aspirant for fame. In a roll, *temp.* Henry VII., it occurs by the name of Kay-Hough. Of doubtful derivation, this may be taken to mean the park or clearing by the quay.* About 120 years ago it was made a distinct parish, and is at present united with Petersham, the living being in the gift of the Crown. The palace was a favourite residence of King George III. and Queen Charlotte, of whom the latter died here in the year 1818. The king is said to have taken an insuperable dislike to Hampton Court, where, when a youth, he had on one occasion received a blow from his grandfather.† Kew House, originally a seat of the Capels, was inhabited by Frederick, Prince of Wales (for the collar of whose dog Pope adapted the motto which is quoted above), and subsequently by his widow, Augusta of Saxe-Gotha. King George III. lived here with the brothers Willis, the Quaker doctors, during his first illness; it was pulled down at the beginning of this century. That sovereign kept a flock of merino sheep in the park, now the pleasure-grounds, and made con-

* Cnf. Haw (German *gehaw*), a place where the trees have been hewn, equivalent to field, English *feld*, a forest clearing; and the English *hay* or *haigh* (German *hagen*), a place surrounded by a hedge, a park.

† See the *Builder*, vol. xliii., p. 801 (Dec. 23, 1882),—"Hampton Court."

siderable additions to the foreign plants collected by his mother, who, in 1760, had established the Botanical Garden. Hither, too, were brought the collections of Captain Cook and Sir Joseph Banks. At the death of King George III. the garden fell into neglect, but was made a national institution in 1840, under the auspices of the father of the present director, Sir Joseph Hooker. The garden has also been enlarged from eleven to about seventy-five acres, extending into Richmond parish. Some of our elder readers will recollect that the garden wall along the road to Richmond had, for a considerable length, been decorated with white chalk drawings, well and boldly delineated, of men-of-war and other vessels,—the pastime, it is said, of an old pensioner who had played his part in our naval victories. A single spar of pine, 159 ft. above ground, from British Columbia, forms a flag-staff by the entrance to the pleasure-grounds from the gardens. From the pagoda, which stands in the former, the public were excluded when their detestable trick of cutting names on the walls became too great a nuisance and disfigurement to be tolerated. The house of Ernest, Duke of Cumberland, was on the southern side of Kew Green. The organ of the church, said to be Handel's, formerly belonged to King George III., and is that upon which he would relieve the tedium of the affliction under which he suffered. In the churchyard are the graves of Zoffany, and of him who in portrait-painting has rivalled, if indeed he did not occasionally excel, his great contemporary Reynolds, and of his friend Kirby, the celebrated Mrs. Trimmer's father. In the mausoleum lie the remains of, amongst others, the late Duke of Cambridge. The church itself was built in the second decade of the eighteenth century, and is no contemptible example of the brickwork of that day.

THE SMOKE NUISANCE; AND AN ACCOUNT OF SOME EXPERIMENTS RELATING THERETO.*

THE history of what is generally known as the "smoke nuisance," extends over more than 600 years.

The earliest mention made of the "smoke nuisance," that I have been able to find, is recorded in the annals of Dunstable, and is to the effect that Queen Eleanor, the wife of Henry III., had to leave that town and go to Tutbury Castle on account of the smoke produced by the sea coal (as the mineral was then called), being so objectionable to the royal lady. This was in 1257. Two years later we have the first recognition by public authority of coal-mining, when a charter was granted by the king to the freemen of Newcastle-upon-Tyne, permitting them to dig coal; but in 1306 the outcry against its use became so great, by reason of the objectionable smoke produced when burning it, that both Houses of Parliament presented a petition against the burning of coal to Edward I., who in consequence issued a proclamation forbidding its use, and authorised the destruction of the furnaces of all those who should afterwards persist in their evil ways. But the scarcity of fuel became in time so great that, notwithstanding the objections raised against this fuel, the people were forced to burn it. Early in the reign of Queen Elizabeth an order in council was issued forbidding the use of coal in London during the sitting of Parliament, lest the health of the members of the two houses should be injured by the smoke. From this time nothing seems to have been done publicly, excepting the passing of an Act in 1610, prohibiting the burning of "Ling Heath, Heather, Furres, Gorse, Turffe, Fernes, &c., on account of the Smoke, and danger arising therefrom," until 1819, when a Select Committee of the House of Commons was appointed "to inquire how far it may be practicable to compel persons using steam-engines and furnaces in their different works, to erect them in a manner less prejudicial to public health and public comfort; and to report their observations thereupon to the House." After examining seven persons (which number was made up of two doctors, one bricklayer, one furnace-builder's assistant, one civil engineer, and one surveyor of "defects of buildings, such as the chimneys, drains, &c."), the committee reported, that they could not be expected to form any ultimate decision as to the precise object of their inquiry, owing to want of time; but confidently hoped "that the nuisance so universally and so justly complained of, may at least be considerably diminished, if not altogether removed." The following year (1820) the same Select Committee was again appointed; they called before them altogether fifteen witnesses, and sent in a report that was shorter even than the previous one, and merely referred the House to the minutes of evidence. The next year, viz., 1821, an Act was passed for "giving greater Facility in the Prosecution and Abatement of Nuisances, arising from Furnaces used, and in the working of Steam-Engines" (1 and 2 George IV., cap. 41). This Act is generally known as Michael Angelo Taylor's Act, and by it the courts are given power to award costs to prosecutors in smoke-nuisance cases. Nothing more was done by Parliament till 1843, when another Select Committee was formed to "inquire into the means, and the expediency of preventing the nuisance of smoke arising from fires, or furnaces, and who were empowered to report their opinion, together with the minutes of evidence taken before them, to the House." This was a thorough inquiry into the question; the committee having before them the best scientific authorities of the day, and the conclusions at which they arrived still hold good at the present time. These conclusions were "that smoke, which is the result of imperfect combustion, may in all cases be much diminished, if not entirely prevented," and that imperfect combustion arises from a deficiency of atmospheric air, to mix with, and act on, the inflammable matter at a proper temperature, and under circumstances which must ensure its effective operation; that is, admission of air, properly regulated, is the great, if not the only principle of preventing smoke, which is generally applicable, and that all inventions for the prevention of smoke (except where the smoke has been separated mechanically by an artificial shower of water, produced in a flue constructed for the purpose) are only various applications in different forms of this general principle; even the flow of a jet of steam, which has been applied by some persons to prevent smoke in furnaces, being merely a modification of this general principle, as, though steam may modify combustion, air must necessarily flow in with it, otherwise the combustion in the furnace is arrested," and that if the admission of air to a furnace is properly regulated a saving of fuel is effected. The committee also stated that the use of anthracite coal, and of coke, as a means of preventing smoke were well known; and they finally recommended that a Bill should be brought into Parliament in the ensuing session to prohibit the production of smoke from furnaces. Bills were brought in in 1844, 1845, and 1846, and then abandoned on account of the strong opposition they received. A fourth committee was appointed to consider the "expediency of preventing the nuisance of smoke"; and the chief results at which they arrived,—after hearing evidence of a second rate quality,—were, that it was not desirable to extend the provisions of an Act beyond the furnaces used for the generation of steam, that in the provisions for this purpose, the offence will be best described as being "The issue of Opaque Smoke." The committee sent in their report on the 9th of May; but the same committee was revived on the 7th of July of the same year, to institute an inquiry into what would be likely to be the effect of the provisions of a Bill, that was then before the House, on the manufacturers of iron, and copper, coal works and distilleries; and they came to the conclusion that it would be inexpedient to include these under the operations of the Act. In August, also of the same year, the Earl of Lincoln gave instructions to Sir Henry Thomas De La Beche and Dr. Lyon Playfair to institute inquiries into the question of smoke prohibition; but to pay especial attention to the working of the Local Acts that were already in existence. The result of the inquiry made by these two gentlemen was a short report to the effect, that in many cases it would be impossible to prevent smoke without destroying important industries in the case of large works, and the utter impossibility to deal with the fire-grates of private houses. The only thing that might be done was to inflict a penalty on those who made smoke in heating the boilers of steam-engines, as by proper furnaces, and due attention, the creation of smoke could be avoided; but even in this case great care would have to be used, for in some instances the alterations or additions necessary to effect the desired end (such as the rebuilding of chimney-shafts, on account of insufficiency of draught, and the re-setting of boilers) might be so great,—especially in the case of small manufacturers,—as to amount to a very heavy fine, or even ruin. The outcome of the inquiry into the working of Local Acts, having for their object the prevention of smoke, was, that the Acts had proved unsuccessful, and for the following reasons:—

1. "From legal difficulties in procuring a conviction under the present ambiguous wording of the smoke clauses."

2. "From inefficient supervision and want of compulsory powers to make the execution of the Acts imperative."

3. "From want of adjustment in the amount of penalties, which, in some cases, are so small as to be practicably useless; in others, so large, and accompanied with so much expense in obtaining the conviction, as also to be inefficient."

The Act of 10 and 11 Victoria, cap. 34, entitled "An Act for Consolidating in one Act certain Provisions usually contained in Acts for Paving, Draining, Cleansing, Lighting, and Improving Towns," dated 21st of June, 1847, was the next step taken, as provision was made, by some of its sections, for dealing with the matter in hand, but not successfully. In the year 1853 an Act was passed for the Metropolis, entitled "An Act to abate the Nuisance arising from the Smoke of Furnaces in the Metropolis, and from Steam Vessels above London Bridge." This Act applied to the works of all manufactures, excepting those of glass and pottery, and it was to be put in operation by the police. The General Board of Health in 1854 sent in to H.M. Secretary for the Home Department a digest of information with regard to the operation of inventions for the consumption of smoke; elicited from among those who had used such inventions for the above purposes, by inquiries of the Board. This inquiry needs no comment, as it was merely a collection of patent schemes. In 1856 a second Act was passed, "To amend the Smoke Nuisance Abatement (Metropolis) Act, 1853." This amendment consisted in extending the operations of the 1853 Act to the furnaces of public baths and washhouses, and in providing that no proceedings should be taken against other nuisances besides smoke, by one of her Majesty's Secretaries of State, unless the local authorities should fail to proceed actively and impartially in noticing and suppressing such nuisances.*

A State paper was published in 1866, containing the replies to a circular letter sent to the mayors and other local authorities of some of the large towns, asking for information on the subject of the law in force in such towns with respect to the consumption of smoke.

All town authorities have power to take action against those causing a nuisance by the production of smoke, under the Acts above mentioned; but many towns have special Acts of Parliament of their own relating to this nuisance. The first town that procured such an Act was Bradford: this was in 1802, and it enacted that "the smoke should be consumed, provided no patent was infringed."

A few towns have distinguished themselves by actively endeavouring to stir the people up, not only to a sense of the evil effects resulting from a smoke-laden atmosphere, but to bring to bear the weight of public opinion upon those owners of manufactories, who are to a great extent the chief offenders in polluting the air. Foremost among these towns are London, Leeds, Manchester, and Birmingham.

The City of London, in October of 1840, gave directions for their General Purposes Committee to make an inquiry into the means of preventiug smoke; for which purpose, the committee inserted advertisements in the papers asking for suggestions and plans, and the result was forty-one communications, after considering which, the committee reported that they believed a remedy could be found for the nuisance, and recommended that a petition should be presented to Parliament asking for relief. Last year (1882) the Corporation appointed a committee "to study the question of smoke abatement in London, and to consider the defects of present legislation, and the advis-

* A paper read before the Society of Civil and Mechanical Engineers, by Mr. E. H. G. Brewster, Member of Council.

* The following is a list of the Public Acts of Parliament relating to the smoke nuisance:—(1821) 1 and 2 George IV., cap. 41; (1843) 6 and 7 Victoria, cap. 20; (1847) 10 and 11 Victoria, cap. 34; (1855) 18 and 19 Victoria, cap. 121; (1866) 29 and 30 Victoria, cap. 90; (1867) 30 and 31 Victoria, cap. 101 (Scotland); (1875) 38 and 39 Victoria, cap. 55; (1878) 41 and 42 Victoria, cap. 52 (Ireland).

ability of taking more urgent measures for the abatement of smoke." The Local Acts for the metropolis are those of 1853 and 1856 (16 & 17 Victoria, cap. 128, and 19 & 20 Victoria, cap. 107), and the Metropolis Local Management Act, 1855 (18 & 19 Victoria, cap. 120).

The town of Leeds has taken a front rank in this question, for not only was this town the first to hold an exhibition of appliances invented for the purpose of smoke prevention, but kept up the agitation that was existing at the time of the said exhibition (1842) for many years afterwards. The moving spirit of this exhibition was the then town clerk, Mr. Edwin Edison. In 1863 the Corporation of Leeds convened a meeting of engineers and stokers; the result of which was an improvement in the combustion of fuel at many of the factories. In 1866 in their Improvement Act they obtained power to interfere with the construction of improperly constructed furnaces and chimneys, to employ policemen as inspectors, and also to appoint a proper smoke inspector. At a meeting of the Priestley Club, held in the Philosophical Hall on May 19th of last year, to discuss the question of "Smoke Abatement," we find that the interest taken by the people of Leeds in the question, was as keen as ever; and it would be worth any one's while who takes an interest in what is being done to prevent smoke, to read the report of this meeting, the proceedings of which were opened by an address by Professor Rücker. The report of the meeting will be found in the *Leeds Mercury* of May 22nd, 1882.

Among scientific and other associations and societies who have taken a more or less active part in this question, are the following:—The Society of Arts, the Royal Society, the Institution of Civil Engineers, the Institution of Mechanical Engineers, the British Association, the Priestley Club, the York Health of Towns Association, the National Health Association, the Kyrle Society, and the Smoke Abatement Committee of Manchester,—all of which are still in existence, excepting the York Towns Health Association.

The Society of Arts has taken a prominent lead among these Associations, having in January, 1855, held a Smoke Abatement Exhibition, and on the 17th of January of the same year a paper was read before the Society, and fully discussed; also, a reward of 25*l.* was offered by this Society for the best essay on the prevention of smoke, which was won by the late Mr. C. Wye Williams. The Royal Society are having extensive experiments made on the composition of London fogs. The Institution of Civil Engineers has had four papers read before it, all of which were fully discussed: the first was by Mr. Andrew Murray, "On the Construction and proper Proportions of Boilers for the Generation of Steam," June, 1844; the second, by Mr. James Simpson, jun., "On the Prevention of Smoke in Engine Furnaces," April, 1854; the third, by Mr. C. Wye Williams, "On the Management of Engine Furnaces, with a view to the Prevention of the Waste and Nuisance from Smoke," April, 1854; and the fourth was by Mr. W. Woodcock, "On the Means of avoiding Smoke from Boiler Furnaces," November, 1854. The Institution of Mechanical Engineers has likewise had a paper read before it; it was by Mr. W. B. Johnson, "On an Apparatus for the Prevention of Smoke in Steam Boilers and other Furnaces." The British Association for the Advancement of Science appointed a committee to report upon the question of the prevention of smoke; and at various meetings of the mechanical section nine papers have been read and discussed.* In 1845 the late Sir William Fairbairn read a report "On the Consumption of Fuel and the Prevention of Smoke." But I will not weary you with any more of the doings of this learned society, nor with those of other societies.

With respect to inventions, for preventing, and trying to consume, smoke, I shall say little or nothing; as, only to enumerate the patents taken out for these inventions would require an evening, and, when done, be of no use whatever. But I cannot pass by this part of my paper without mentioning the earliest of these inventions, which was that of Dr. Papin, date 1697, who proposed to force air down a pipe immediately above the fire, and by this means the smoke was to be consumed. I bring this invention before you as the principle of mixing air with the products of combustion, is that now universally admitted to be the only means of preventing smoke, excepting, of course, the using of a smokeless fuel; which was done at a recent Smoke Abatement Exhibition by an exhibitor who was showing his smoke-consuming apparatus at work.

Four exhibitions of inventions and schemes for preventing smoke have been held. The first at Leeds in 1842, the second by the Society of Arts in the Adelphi, London, in January, 1855, the third at South Kensington, opened on the 30th day of November, 1881; and the fourth was held at Manchester last year. A series of excellent lectures was delivered in connexion with the South Kensington Smoke Abatement Exhibition; but for particulars of these I must refer you to the Report of that Exhibition.

The books, pamphlets, and papers written on the subject of "smoke prevention," are almost as numerous as the patents for it, therefore, I will content myself by drawing your attention to only two of them, and they are, the book of Mr. C. Wye Williams on "The Combustion of Coal and the Prevention of Smoke Chemically and Practically Considered," and the pamphlet written by J. Evelyn, in 1661, called, "Fumifugium, or the Inconvenience of the Air and Smoke of London, dissipated. Together with some Remedies humbly proposed by J. E., esq., to his Sacred Majestie and to the Parliament now assembled." I bring the former to your notice on account of its excellence, and the second, because of its being the first work on Coal Smoke, and, therefore, historically interesting.

Having given a short history of the "smoke question," I shall now proceed to the second part of my paper, which will be an account of some experiments that were made for Sir Frederick Bramwell, with the idea of seeing what could be done in the way of abstracting the visible particles of carbon contained in the products resulting from the combustion of coal, popularly known as smoke, a term I have hitherto used, and for the sake of convenience shall continue so to do.

Before commencing the experiments, the first thing to be done was to construct an apparatus that should give complete control over the smoke, and the one I shall now describe was devised, and answered admirably. It consisted of a small portable stove, having a sheet-iron chimney, 4 in. in diameter, and 12 ft. high, surrounded with dry sand, contained in 6-in. diameter stoneware pipes. At 2 ft. from the top of this chimney a junction was made with a descending uncovered pipe (similar to the ascending one), by means of a semicircular bend. The descending pipe ended in the top of a wooden chest, which I shall call the collector. This was 2 ft. square by 2 ft. 9 in. high, and contained four movable grids. In the top of this collector small holes were pierced, and, by means of a wooden lip all round, a kind of sieve was thus formed, the object of which was to enable water to be run on to it, and so produce a shower of fine streams of water inside the collector. At the junction of the ascending pipe, and the bend, a flap valve with a weighted lever attached was placed, so that by means of a cord fastened to the lever at the end opposite to the weight, the person conducting the experiments (myself) could at will direct the smoke from the fire, either into the air direct, or pass the smoke into the collector. Just below the junction of the bend on the descending pipe, a jet of water was made to play on to a small disc, producing a spray so fine as to appear like a cloud when the door,—that had been made in the pipe for purposes of examination,—was opened. The ascending-pipe was cased in sand for the purpose of keeping it hot, while the descending-pipe was uncovered, and provided with the jet for the double purpose of keeping the pipe cool, and assisting in clearing the products of combustion.

Having got the apparatus in order, the fire was lighted, and the smoke from it allowed to pass out at the top of the ascending-pipe until the said pipe was somewhat warm, when, by means of the valve previously mentioned, the smoke was diverted into the descending-pipe, whence it passed into the collector, and out of the opening provided at the bottom. After permitting the smoke thus to flow for fifteen minutes, a thermometer was placed in the collector, where it remained for a similar period, the smoke issuing as before, and then the temperature was noted, and found to be 90 deg. I regret to say that I can find no record of the temperature of the external air, but, as the experiment was made in December, 1881, it was probably about 50 deg., the experiments having been made in the smithy of Messrs. Horn & Sons, the engineers,—the jet was not at work. The next thing done was to start the jet, and cause water to be poured on the top of the collector, through the holes of which the water ran in fine streams; but the effect on the smoke, which had all this time been pouring out, was nothing, so far as the eye could judge. The collector was then half filled with coke broken into pieces about the size of a large walnut, and the *débris* produced in the breakage. But on passing the smoke through the coke no effect was apparent. The collector was then gradually filled up at intervals with coke of the same size and kind as before, and the results noted at each increase in depth of material. No appreciable result was obtained, until the jet was started, and the coke was saturated with water by pouring it on the top of the collector, when a decided improvement took place; the smoke turning from a dirty black to a yellowish brown colour. It was found that the smoke, notwithstanding the presence of the coke, preferred to pass down the descending-pipe, and through the collector, to passing out of the top of the ascending-pipe, when the jet was at work. To ensure the smoke being evenly distributed (between the top of the coke, and the underside of the top of the collector), a space of 1½ in. in depth was left. A trial was now made to see if the spray from the jet, water, and coke, would entirely clean the smoke produced, by any quantity of coal, however small; and although the amounts of coal that were tried were gradually reduced until only one quarter of an ounce was put into a clear fire, smoke was made, and showed itself after passing through the collector. Coal-tar was next poured on the coke until it became thoroughly saturated; but the only effect on the forthcoming smoke was that it smelt much worse than before. After this the collector was emptied of its contents, which were found to have been well filled in, and thoroughly impregnated with the tar, notwithstanding that it had been previously saturated with water. The quantity of coke in the collector equalled 10⅓ cubic feet.

Four trays were covered with cocoa-nut matting, and placed in the collector at equal distances apart, and jets of water were made to play across the inside, the jets issuing from holes pierced in pipes situated above the top tray, and on each side. The result of this experiment was nothing, unless the straining of a few of the coarser particles from out of the smoke be considered anything.

Having finished with this small collector, a second and much larger was constructed, which was 12 ft. high, by 3 ft. by 3 ft., having a perforated tray top, similar to the previous collector. The bottom was of a V shape, starting from 9 in. up the sides, and coming down to a point in the centre, in front of which a circular hole was pierced, to take a piece of 4-in. diameter wrought tubing that formed the collector outlet. At 9 in. from the bottom a wooden grid was placed, and three others at such distances apart as to divide the collector into four equal chambers, in the front of which doors were placed. No alterations were made in the remainder of the apparatus.

This collector was then tried with varying depths of coke, under similar conditions to the previous experiments; but as the smoke still came forth in much about the same condition that it had done when the first set of trials were made, the collector (after a lapse of time of six weeks, to allow the coke to drain and dry) was entirely filled up, and the smoke once more passed through the apparatus, the jet not being at work, and the coke kept dry. The smoke took five minutes before it made its appearance at the outlet, but in another five minutes the smoke came forth in quantities, and was of a brownish colour. The next thing done was to set up a piece of white blotting-paper before the outlet of the collector, at a distance from it of 4 in., and allow the smoke to play on to the paper for ten minutes, in order that it might be seen whether it would be at all stained; but at

* The following is a list of these:—C. W. Williams, "On the Prevention of Smoke," 1840; W. Fairbairn, "On Combustion of Coal and Prevention of Smoke," 1842; C. W. Williams, "On several Plans for abating the Nuisance from Smoke," 1842; H. Dircks, "On the Production and Prevention of Smoke from Engine-boilers and other Furnaces," 1843; J. Chanter, "On a Furnace for Preventing Smoke," 1843; J. Jukes, "Furnace for Burning Smoke," 1843; Rev. F. F. Statham, "On the Consumption of Smoke in Furnaces and Manufacturing Premises," 1853; W. Fairbairn, "On the Prevention of Smoke," 1854; D. K. Clark, "Coal Burning without Smoke."

the end of the time for which it was exposed no difference could be seen between the front and the back, although it had a very disagreeable, smoky smell. The paper was then well wetted, and again exposed to the issuing smoke for ten minutes, but with the same result as before. A similar piece of wetted paper was now fixed at 4 in. above the top of the chimney, and the smoke, cut off from the collector, and made to pass into the air. After remaining for ten minutes the paper was taken down and examined, when it was found to be discoloured, and had on it a deposit of fine soot. The object of this last experiment was to obtain some idea as to the amount of cleansing the smoke was receiving in passing through the coke. An exact estimate of this could not be obtained, for, although all the smoke was passed through the collector, there was no way of obtaining a knowledge of what had been extracted, except by weighing the collector and its contents, both before an experiment and afterwards. This was practically an impossibility, for nothing but a very large, extremely accurate and specially constructed weighing-machine, would have been of any use, and the knowledge, when obtained, of little practical value. But to resume. The coke in the collection was next thoroughly wetted, the jet set to work, and water turned on to the perforated top (the holes in which had been previously stopped with clay) so as to keep a number of fine streams of water constantly running, and thus ensure the coke being kept in a saturated condition. The smoke was now passed into the collector, and notwithstanding everything that the products of combustion had passed through,—for they did pass through,—still there was smoke, much less undoubtedly, but there was still a fair quantity of it. The result was astounding, for from a small grate, the area of which was only 45 square inches, the smoke had passed through a mass of saturated coke presenting an area of 1,296 square inches, and having a depth of 11 ft., amounting in all to 99 cubic feet. The result was surprising, not only on account of the smoke still being visible, but also that the gases should have been able to make their way through the collector at all when the obstruction to their path is considered. As I have before stated, all the dust and small pieces made in breaking the coke were put into the collector with the larger pieces. When the collector was emptied the contents resembled nothing so much in consistency as well mixed concrete, ready for depositing. A test was now made of the partially-cleared smoke by placing a piece of wetted blotting-paper at a distance of 4 in. in front of the outlet, and exposing it for two hours to the smoke. This resulted in nothing, as the paper was not affected in any way, excepting that it smelt of smoke. It was thought that the dense appearance of the issuing gases might be due to some extent to the vapour mixed with them: so a length of sheet-iron tubing was added to the outlet, and a fire made underneath it in order that the vapour might, by being heated, be made invisible. This had some effect, for the smoky aspect of the products of combustion was to a slight extent decreased.

The results of the experiments that have been just recorded were so unexpected that it was imagined that there might be some fissure in the coke in the collector, where the smoke made its way through; accordingly the lowest chamber was emptied, and on examining the under side of the coke that was remaining the smoke was seen to be evenly and gently making its way through the whole of the exposed area, and no place was found where the smoke issued in greater volume than another. The smoke did not come through in jets, but gently and evenly from the whole surface, showing that the coke had been carefully filled in.

Into the lower part of the collector left empty by the extraction of the coke from the lowest chamber (which amounted to one-fourth), a tray was fitted; over which was spread a horse-hair cloth (similar to that used for covering upholstery), and on this was laid, to a depth of 3 in., coke dust, that had been passed through a sieve with one-eighth of an inch meshes. On making a trial with this arrangement it was found that the draught was stifled, and that little or nothing passed through.

Wetted blotting-paper had been exposed to the smoke at the outlet, when the collector was full, as before related, and now the same kind of experiment was tried, with the collector only three quarters full, and without the fire under the outlet; but in addition to the outlet paper another was placed above the top of the chimney. The outlet paper was exposed for 120 minutes, and the chimney paper, for three periods of four minutes each so as to obtain an average result of one-tenth of the time of the exposure of the outlet paper; the total length of time of the trial being 132 minutes. The outlet pipe was now lengthened to 6 ft.; and built round it was a furnace to enable the vapour that was mixed with the smoke to be better heated than had been the case previously. After this alteration another trial was made; but the result was still smoke, although the escaping products were heated to such an extent as to dry and scorch, the exposed paper that had been set in front of the outlet. The length of time that the papers were exposed was six minutes and sixty minutes respectively.

A second experiment was made with the collector filled up with coke, but with this difference,—in the former case only one paper was exposed, whereas in this two were used, one at the outlet, and one at the top of the chimney; the first for four periods of thirty minutes each, and the second for four periods of three minutes; the time of the latter being one-tenth of the former. The result, so far as the outlet paper was concerned, was nothing.

A second series of experiments was tried with various thicknesses of coke. With this series, paper tests were made under similar conditions to the previous ones, only the periods were different, being, in the case of the exposed papers, at the top of the chimney, four periods of one minute at ten minutes intervals; and in the case of the outlet papers, four periods of ten minutes, at intervals of one minute, each experiment lasting forty-four minutes.

No. of Experiment.	Condition of Collector.	Results.
1	Full of coke.	Smoke came from outlet, but had no effect on exposed paper. Chimney paper discoloured, and had a deposit of fine soot on it.
2	¾ full of coke.	More smoke from outlet than before. Effect on outlet paper nothing.
3	½ full of coke.	More smoke. Effect on outlet nothing.
4	¼ full of coke.	Very little difference in the amount or colour of the smoke, between this experiment and the previous one. Effect on outlet paper nothing.

A third collector was constructed like unto the last, excepting that it was divided into six equal compartments by six grids, in place of four equal compartments by four grids, and was only 1 square foot in area instead of 9 square feet, and contained 12 ft. depth of coke in lieu of 11 ft. This collector replaced the one last used, and was attached to the other parts of the apparatus; it was also filled with the same broken coke. The object of the construction of this collector was to see what would be the effect of reducing its area. All being in order, smoke was passed through the apparatus, although with difficulty, as the draught was nearly choked; what smoke came through formed a dense and yellow-coloured cloud. A third series of experiments was made with this altered apparatus, under the same conditions as before, and with the same time devoted to each experiment, viz., forty-four minutes. The following table gives the results and particulars:—

No. of Experiment.	Condition of Collector.	Results.
1	Full of coke.	Smoke only just making its way through the collector, and when through was thick, yellow, and dirty. Outlet paper showed no appearance of having been exposed. Chimney paper discoloured, and had a deposit of fine soot on it.
2	10 ft. of coke.	Smoke came out freely, and was black, thick, and dirty, looking as if it had not passed through anything. Outlet paper not affected.
3	8 ft. of coke.	Smoke was black, thick, and dirty. Outlet paper not affected.
4	6 ft. of coke.	Smoke as before. Outlet paper speckled, but not tinted.
5	2 ft. of coke.	Smoke as before. Very little effect on outlet paper.
6	2 ft. of coke.	Smoke as before. Outlet paper only very slightly discoloured.
7	1 ft. of coke.	Smoke came out in volumes. Outlet paper not affected at all.

A different form of experiment was the next that was tried, which was to place a tray covered with horsehair cloth in the collector, the jet not being in operation. On turning the smoke from the chimney or ascending-pipe to the descending-pipe, the draught was found to be almost immediately stopped; in fact, so quickly did this take place, that I thought water must have got on to the tray; but, on inspection, it was found that the stoppage of the draught was due to a fine deposit of soot left on the tray by the smoke. To make quite certain that everything was as it should be, the tray was removed, and the smoke allowed to pass through the collector, which it did, shooting out a distance of 6 ft. in a horizontal direction, proving conclusively that nothing was wrong.

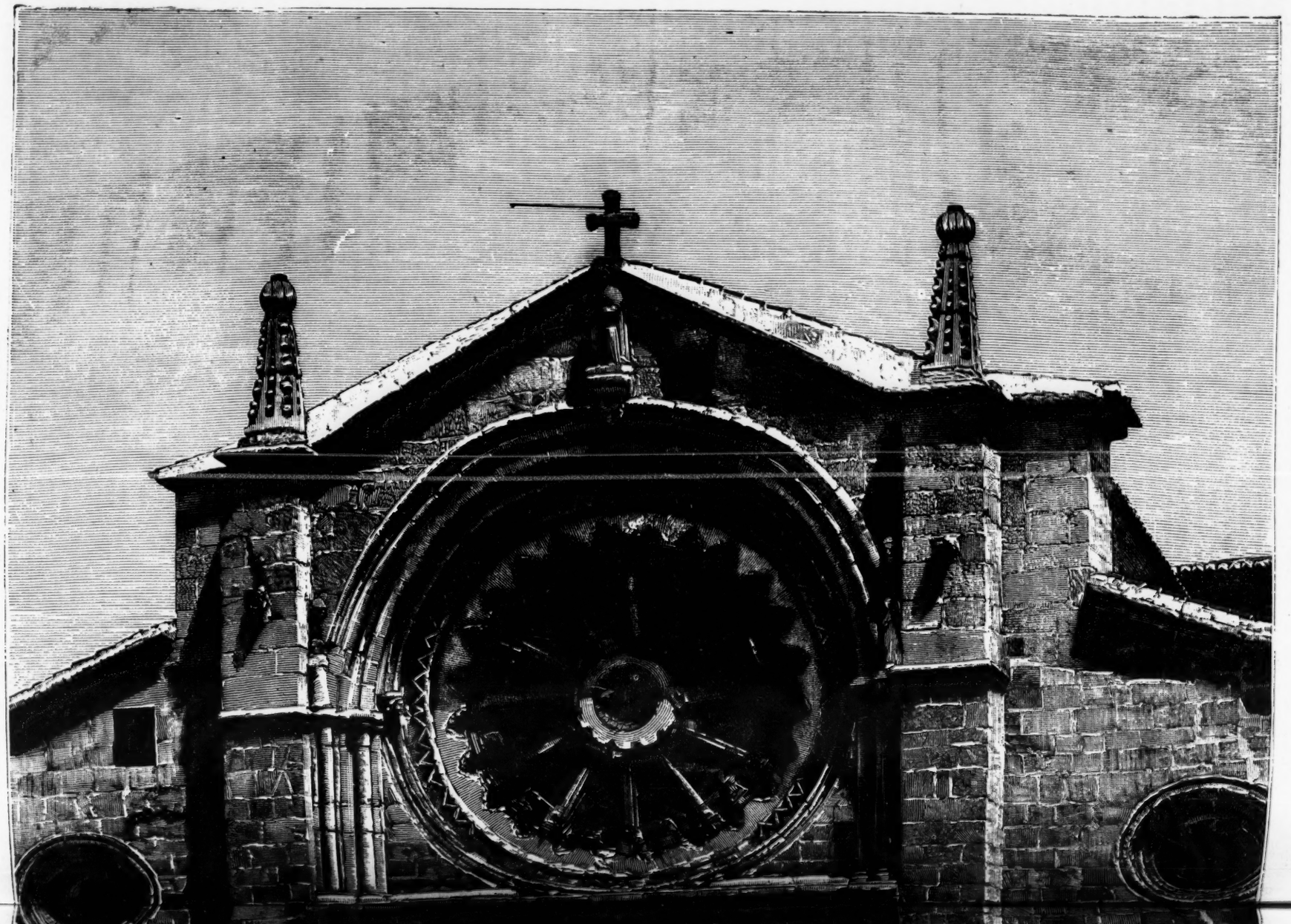
The fire in the stove was then allowed to burn until it was clear, and the horsehair tray that had been previously used (having been cleaned), was put into the collector; the products of combustion were passed through the apparatus for forty minutes. At the end of this time the tray was examined, when there was found retained by it only a little quantity of fine dust,—about as much as would half fill a teaspoon. It is needless to say that there was no smoke to be seen at the outlet.

Cotton wool was next placed on the tray to a depth of 6 in., and the smoke sent into the collector, the fire having been made up with coal slack. The smoke came from the outlet for half an hour, at the end of which time it ceased to make its way through, the cotton wool having become choked. On examination the wool was found to be discoloured to a depth of 2 in. The wool was then turned upside down, and placed on the tray in the collector; smoke was passed through, and at the expiration of two hours, when the experiment was terminated, some smoke still continued to make its way out. 1 ft. of the broken coke was again put into the collector, and on it was placed a layer of coke dust, 1½ in. in depth,—the jet was not at work, and no water was used,—then the smoke was passed through: result, smoke. The thickness of dust was increased to 3 in.; again the result was smoke. But on adding another 1½ in. of coke dust, making 4½ in. in all, the draught was stifled.

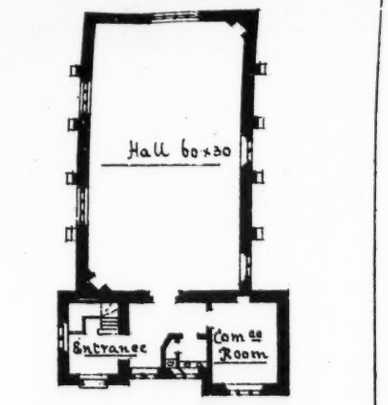
The last experiment was to fill the collector full of the broken coke, to send the smoke through it, and try what would be the effect of holding a piece of white paper in the outcoming smoke, and rub one part of the paper against the other while thus held; the paper came out of the ordeal unsullied, although the smoke was dense to look at, disagreeable to smell, and horrible to breathe.

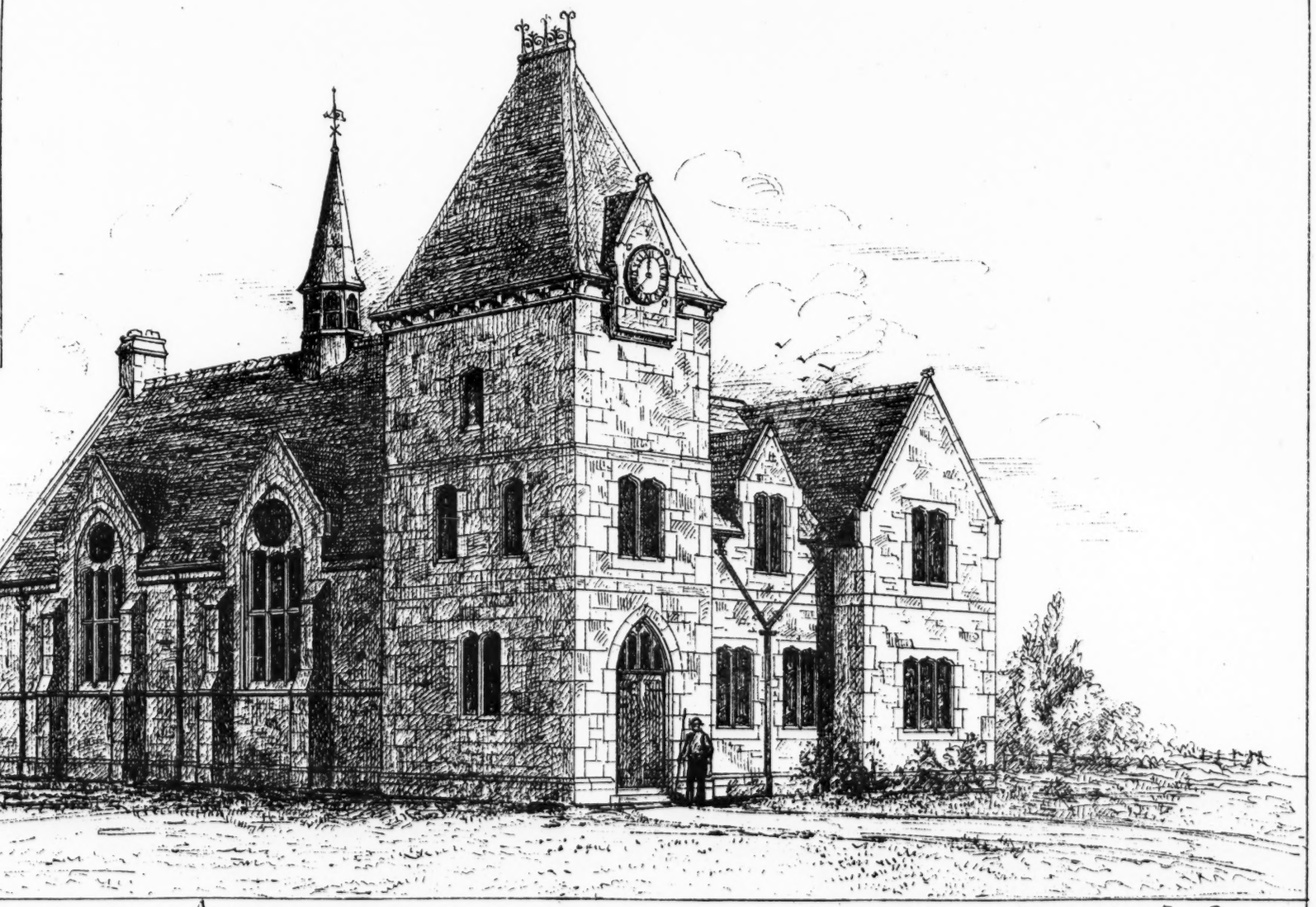
These experiments, I think, show that do what you will with smoke when it is once made, nothing will rid it of its objectionable nature. The filtering that the smoke received in the just described trials, certainly did away with the coarser particles of carbon, but there was left behind the fog-producing and evil portion of it; in the same way that polluted water may be filtered, and freed from the suspended matter contained therein, and yet be poisonous.

In conclusion, let me say a few words about the fires of private houses. The law has at no time permitted interference with the domestic fire, but I think it is now time that it should do so; for although the amount of smoke from a private house is not great when compared with that from some factory, yet, when we have a very great number of them, the effect produced is (especially in the case of London) greater than that produced by manufactories. If any one doubts this statement let him take his station some Sunday afternoon in summer time on one of the hills around London, where he can overlook it, and there take note of the effect on the atmosphere of the domestic fire. Should he take his place about two p.m. he will, if he waits, gradually see the air become clear, and so remain for an hour and a half, when the atmosphere will again become thick. This is owing entirely to the domestic fires, for it is at this time, viz., about four p.m., that they are made up for the afternoon's tea. If the murkyness of the air was due to the few factory furnaces that are alight on a Sunday, then there would be no clear atmosphere at any time. Such being the effect in summer, when there is seldom more than one fire in a house, there is no need to wonder that London has fogs in winter; therefore it appears to me that some action ought to be taken to enforce either the use of a smokeless fuel, or the great use of a that, with a fair amount of care, would burn coal without making smoke.



PORTAL OF THE CHURCH OF SAN PEDRO, AVILA, SPAIN.





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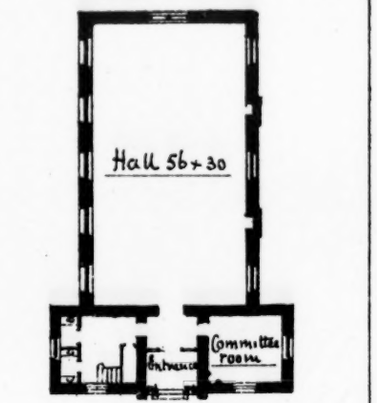

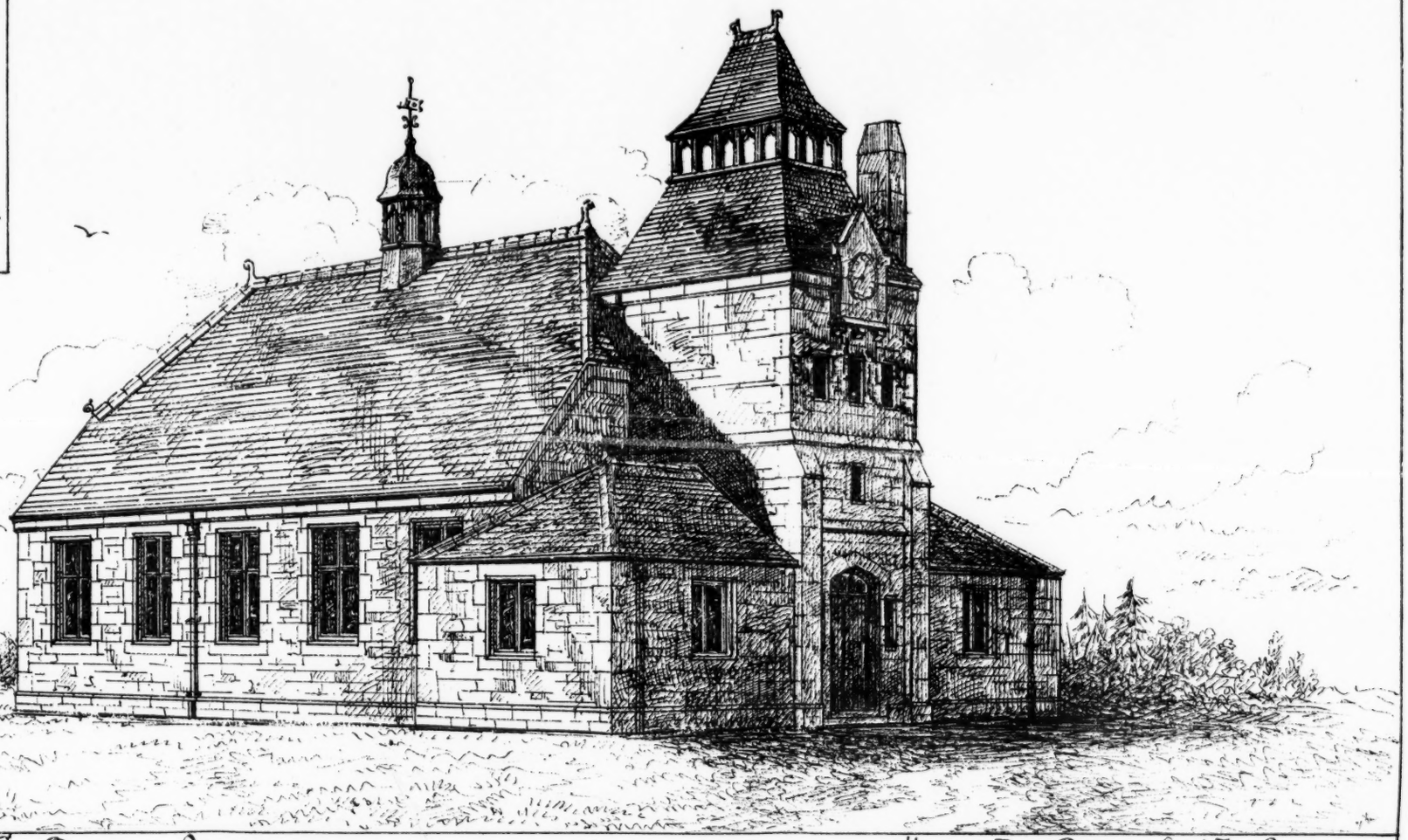

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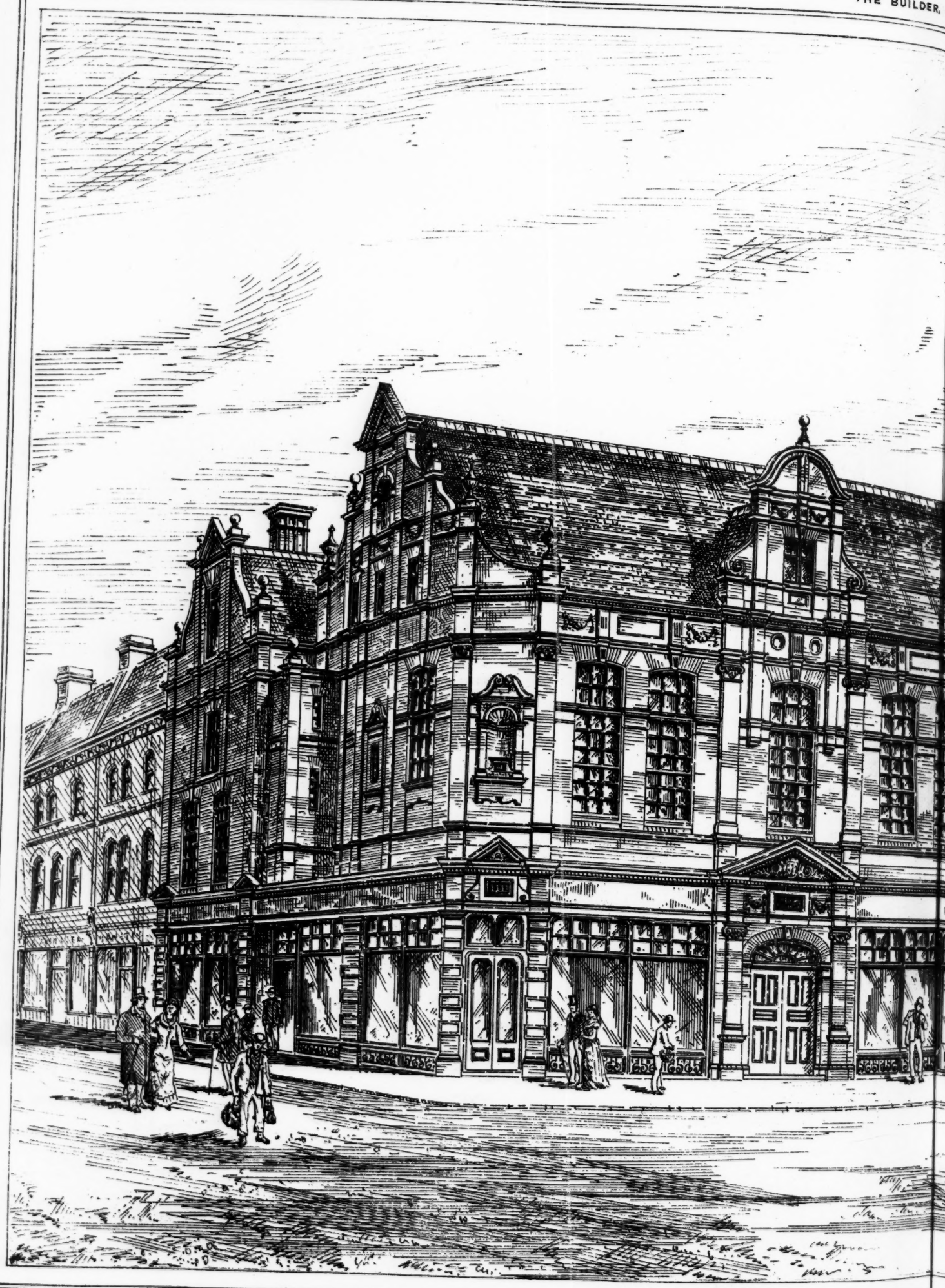

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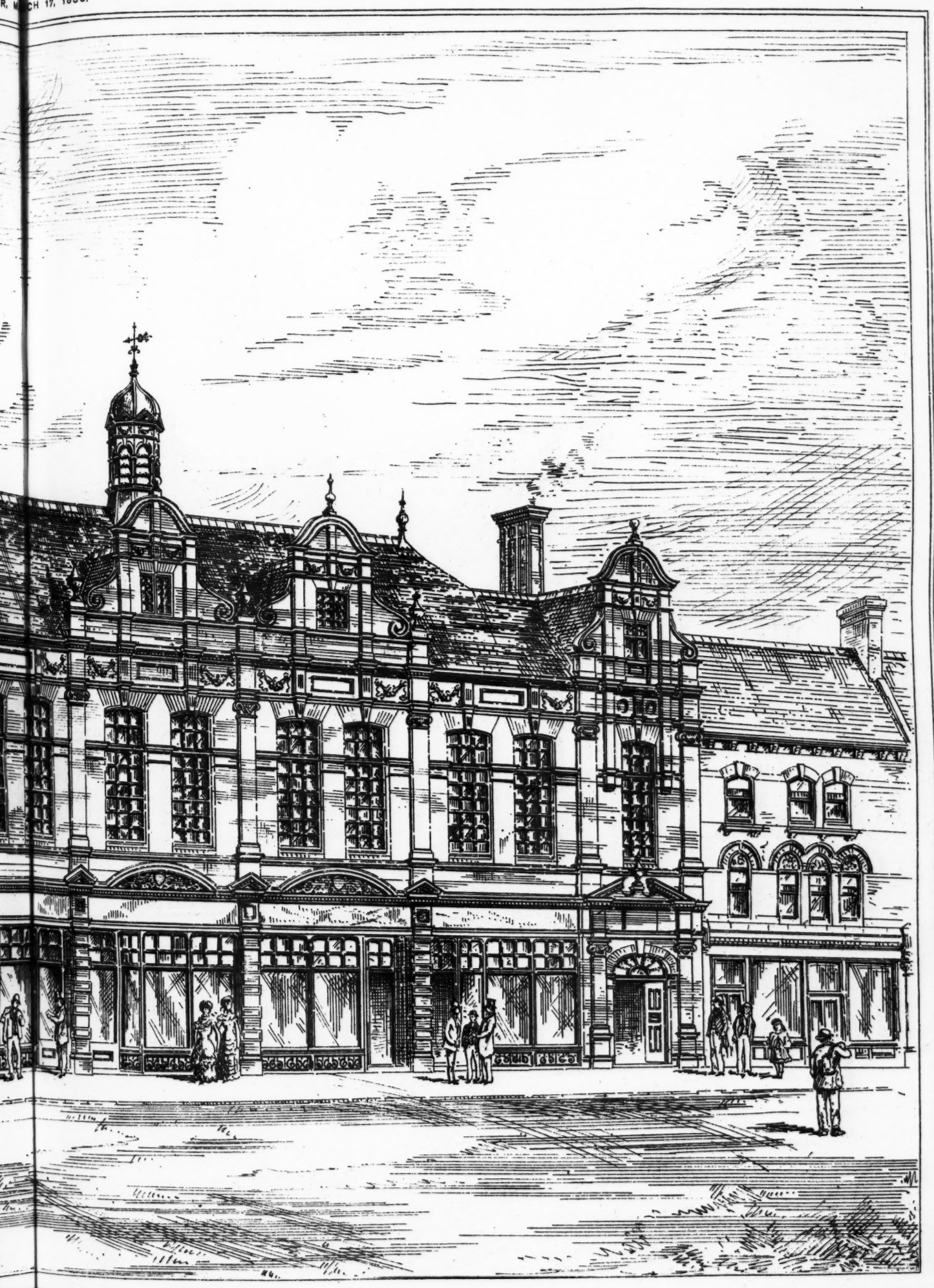

TOWN HALL ⊛ MORRIS & STALLWOOD ARCHITECTS READING

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PORTAL OF THE CHURCH OF SAN PEDRO, AVILA, SPAIN.

THE exact date of the foundation of this church appears not to be known; but it must have been erected previously to the thirteenth century, for it is mentioned in public documents of the first half of that century. The building is severe but imposing, its style being Romanesque, termed by the late Mr. G. E. Street, Spanish Romanesque. Its huge mass, of jasper-like sandstone, has acquired during the course of centuries that pinkish hue which is characteristic of ancient monuments under a southern sky. The portal, of which we give a view in this week's *Builder*, is an arch of impressive effect. Above it is a richly-carved rose-window, which may compete not without advantage with the famous windows of Burgos Cathedral. The interior of the church is richly carved; especially worthy of note is the artistic cross erected in 1530 by Archbishop Fr. Francisco Ruiz. Amongst the records of the old Abulensian church is found an account of the first sitting of the Court of the Inquisition at Avila, and which condemned Niño de la Guardia to be burned.

NEW TOWN-HALL FOR BATTERSEA.

THIS building, which is being erected by the Battersea and New Wandsworth Public Halls Company, at the corner of Lavender-hill and St. John's-road, Battersea, close to Clapham Junction Station, has the ground-floor on the two frontages laid out for shops, while on the same floor behind there is a suite of rooms intended to accommodate a social club, and including reading, coffee, smoking, and billiard rooms, club-hall, and winter-garden, and kitchens and servants' offices in the basement beneath. The public-hall, which is 106 ft. long, 40 ft. wide, and 32 ft. high, is on the first floor, and entirely fireproof, as are also the staircases and approaches. There are various rooms attached, intended for retiring, cloak, and supper rooms, caretaker's apartments, and secretary's offices. The external walling has steel-coloured bricks for facings, red bricks for dressings, and moulded cornices, &c., of gauged brickwork, and ornamentation will be carved in rubbing bricks. The works are being carried out by Mr. W. Smith, of Vauxhall, whose contract is about 10,000*l.*, and the design, which was selected from six submitted in limited competition, is by Messrs. Morris & Stallwood, architects, Reading, who are superintending the erection of the buildings.

PARISH HALLS, JERSEY.

THESE two buildings, which we illustrate in our present number, are now in course of erection, from the designs of Messrs. Hayward & Son, of Exeter, and are intended for parish meetings and the numerous other purposes for which a large room is useful in a country district.

Each building contains, in addition to the main hall, a committee-room, with lavatories, &c., and, in the case of the St. Lawrence Hall, accommodation for a hall-keeper on the upper floor of the front building. The tower in both cases is intended to contain a clock.

The windows and other dressed stonework are executed in grey granite, and the walling in granite, hammer-dressed, of a reddish tint, to give variety in colour. The buildings occupy elevated sites, and are exposed to considerable drift of weather, and it was, therefore, thought advisable that the roofs should be covered with slate instead of tiles, though, on other grounds, the architects would have preferred the latter.

Due provision is made for the proper ventilation of the hall by the admission of fresh air by means of "Tobin's tubes," and the extraction of the vitiated air by means of Boyle's ventilators in the central turrets, connected with air-trunks above the ceilings.

Both rooms are warmed by two large open stoves of special design, on the slow-combustion principle, manufactured by Messrs. King & Munk, of Exeter.

The St. Ouen's Hall is being carried out by the builder, Mr. Alexandre, at a cost of 1,115*l.*, under the supervision of Mr. John Laurens, as clerk of works; and the St. Lawrence's Hall, by Mr. Viel, at a cost of 1,550*l.*, under the superintendence of Mr. George J. De la Perrelle.

HINDRANCES.*

HINDRANCES meet us at every turn in life,—and for the most part are blessings in disguise. All wise effort and activity, all triumphant patience and perseverance, springs from conflict with besetting difficulties. It is true that the great triumphs of mechanical and physical science have been won in spite of innumerable hindrances, but it is not less true that they have been won *because* of hindrances, and their salutary influence on the minds and characters of our greatest inventors. Indeed, we may go still further and say that it is entirely because of hindrances and the consequent strain upon our mental and physical energies that this small country occupies the proud position of leader among the nations of the earth; and that with all our drawbacks of leaden skies, and storms, and fogs, and rock-bound shores strewn with perennial wrecks, our ships carry the merchandise of the world and our ensign floats o'er every sea. In short, the very hindrances which seem most formidable, and with which our nation has struggled from its infancy, have been the means of developing our national virtues, and so giving us a pre-eminence unparalleled.

Nevertheless, hindrances are not things to be trifled with. They may be regarded as inevitable, but never as invincible, and it depends entirely upon how we meet them whether they are to turn us aside with the humiliating consciousness of defeat, or to develop latent powers through victorious conflict, and so inspire us with self-reliance and renewed faith in the omnipotence of will. And what is true of the hindrances, the interminable worries and obstacles, great and small, which we experience as individuals in domestic, social, or professional life, is not less true of those which, in a broader sense, may be said rather to affect certain interests or classes, and which must be met, not so much by individual effort as by organised co-operation. But, in dealing with these common hindrances, special difficulties confront us, and whereas it might be thought that an association, by the weight of numbers, the adhesion of common interest, and the impetus of identical motive, would carry all before it; yet, in point of fact, we find that such combined efforts are, for the most part, only partially successful, and that the force of numerical weight and identity of interest is too often counterbalanced by the supineness of some or the jealousy, stupidity, or obstinacy of others. Men of energy and true valour, who rather rejoice to grapple with difficulties which seem to be "foemen worthy of their steel," are, when associated with the timid and irresolute, too often discouraged and paralysed, and so, in corporate action, there is always a great danger of weakness and procrastination. In other words, in associations or incorporations, we lack that concentration of energy and unity of will which is possible in the individual alone. Still, with all these disadvantages, we must ever fall back upon combined effort for the accomplishment of much which co-operation alone can effect,—and in the case of our own profession all past experience teaches,—and I trust what I have still to say may tend still more to impress the lesson upon our minds,—that while each for himself should valiantly strive to surmount the hindrances which beset his path, he should not forget that there is work to be done for himself and for his profession, which can only be accomplished by organised co-operation. . . . . Without going into any detail here,—which time forbids,—let me mention only two lines of practical usefulness open to us. First, We may do much to further the movement which seems now at last to be taking shape among us for the establishment of technical schools in our larger towns. Such schools may be of immense use, not only to our students but to the men who are to carry out our designs, and it seems most fitting that our societies should take an active part in trying to secure for their localities the advantage of such institutions. In a movement of this sort we cannott do much as individuals, but united in such associations as this we may exert considerable influence, and give good advice, and I venture to say that it is our duty to do so. Then, secondly, we can do much to remove a serious hindrance to the earnest student of limited means. I mean the want of good books of reference. Good books will do the student no harm. They are not like the pony, but rather like the alpenstock, a weapon for the strong and the adventurous. Now, even in this wealthy town of Leeds, you cannot expect to do much in the way of forming an Architectural Library, but it has occurred to me to suggest one way of getting over this difficulty which I do not think has been tried at all; and that is, that we,—I mean we architectural societies,—should each in our own locality, endeavour to get a selection of the best architectural works added to our public libraries. I suppose in all our great centres now we have free libraries. Their purpose is not to supply light literature to the masses, but rather and primarily to give the poorer workers in science, art, literature, and mechanics, free access to the best standard works. They form, indeed, a necessary complement to technical schools, and it cannot be doubted that any suggestion likely to increase their usefulness in this respect would always be welcome. If we recommend a selection of the most valuable,—I mean useful,—architectural works, and from time to time the addition of new works, I think there is every reason to believe that our library committees would act upon our suggestions; and so this serious hindrance would be removed, and our students would have less cause to regret their distance from Conduit-street. But I think our duty hardly ends here. In many towns with good free libraries there are architectural students but no architectural societies. Is it too much to propose that, while it is so, we should, after mutual conference, draw up some definite suggestions for the guidance of library committees generally? In this, of course, we would expect the advice and co-operation of the Institute and the Association. . . .

Excessive Competition.—Now, to a considerable extent excessive competition (and it is only when it is excessive that it is bad) would be modified if a line of demarcation could be drawn by some such means as have just been indicated between those who are entitled to call themselves architects and those who are not. This, however, would only mitigate the evil, which, I suppose, affects every other profession as well as our own. The worst effects of excessive competition can only be met by us individually forming and adhering to a high standard of professional honour and etiquette, and by strict adherence to the golden rule. In this, the bond of a common fellowship in a great national association, would strengthen us, but otherwise, in our corporate capacity, we can do little more. We have, of course, that outcome of excessive competition to deal with,—"competitions" technically so called,—a theme I shall not touch upon, except to say that, thanks chiefly to the praiseworthy exertions of Mr. Barry, a considerable improvement in the conditions of recent competitions has been secured, and I trust in all important competitions will be retained. Competitions must be classed among our hindrances. I think this much must be conceded, even if we differ from Mr. Barry as to the expediency of double competitions. I understand that you are almost unanimously against that arrangement, and I know that many Glasgow architects are also opposed to it,—and, as the discussion at the Institute has not yet closed, I think the more fully we can get at the general sense of the profession on this important point the better. It would, I think, be easy to show that competitions are detrimental to our profession, though often beneficial to individuals; and while we should together try to mitigate their evil effects, there will always, I fear, remain only one safe course for those who are fully sensible of their danger, and that is to have nothing to do with them. I read somewhere lately of a very simple kind of trap used by a savage tribe for catching monkeys. It consists of a gourd or cocoanut shell, having a hole cut in it just large enough to admit a monkey's hand, if I may so speak. A few nuts are put into the shell, which is then fixed securely in a tree, and the trap is complete. Now these nuts are very tempting, and there seems to be no reason why the monkeys should not help themselves to them, and in point of fact they do so; and little monkeys out on their first foraging expedition probably do so with impunity, and are all the better of their nuts. But the object of the natives is not to feed young monkeys, but to feed upon old ones, and these they actually catch in large numbers, because it so happens that they have pretty accurately gauged the mental capacity of the monkey as well as the power of the nutty temptation; hence the simplicity of the

* From a paper on this subject read by Mr. J. Heyman at meeting of Leeds Architectural Society, March 6, briefly noticed in our last.

contrivance. The monkeys catch themselves, in short, in this wise, in this foolish wise,—inserting their hands and seizing the nuts they cannot get them out again, and as they have not the sense to drop the nuts they fall into the hands of their enemies and are miserably slain. There is wisdom in this parable; moreover, it suggests this deep and difficult question, is the unhappy fate of such creatures the result of greed or stupidity? It is clear that they might withdraw their hands as easily as they inserted them if only they dropped the nuts. Why did they not do so? That is the question. The traps are fatal to grown-up monkeys, but if they did not choose to catch themselves *no such traps would be set*.

There is another kind of competition which we may fairly grumble at and do what we can to prevent. I refer to the competition of salaried town officials,—city architects, burgh surveyors and the like, who are paid from rates. In the case of all large cities the corporation has constantly need of the advice of a skilful architect, but it is never necessary that he should be employed to design new buildings,—still less that he should engage in private practice,—and there is a double injustice in his doing so; there is injustice to the ratepayers who might for such purposes have better advice, and there is injustice to ordinary practitioners who are deprived of work by one whom they are obliged to pay, and whose draughtsman they are obliged to pay, and who is, in fact, to a certain extent their servant. It must never be forgotten that such functionaries are not selected for artistic ability. It is not because they can produce a good architectural design that they gain their place, but for very different qualifications or reasons. Indeed, a man may be a most excellent town surveyor although quite unable to design a respectable tavern, and yet we find corporations in their ignorance entrusting to such a one works of great magnitude, to the manifest injury and discredit of the profession. Of course, I do not mean to say that there is anything to prevent a city architect being at once an efficient surveyor and a first-rate designer, but, in fact, we find that men of the highest artistic power do not seek such appointments. Perhaps in Leeds you may have an example to the contrary, so,—excepting Leeds,—I shall venture to say that there is probably not an important town in the kingdom in which the town surveyor can by any stretch of courtesy be called the ablest architect in the place. It is therefore evident that the practice of which I complain is injurious not merely to our business and our art, but also to the interests of the ratepayers generally. . . .

Hindrances affecting our Art.—I must, indeed, confine myself to one small branch of the subject,—I must not even refer to such obvious hindrances as the pernicious influence of fashion,—rather a tempting theme; the exigencies of the times we live in, which cannot be ignored; the commercial spirit of the age; the mechanical ingenuity; the very facilities we have for getting work speedily and economically done,—especially by the substitution of machinery for manual labour; we have heard much about these things, and I cannot help thinking that a good deal that we have heard has been the language of impractical hyperbole. But architecture more than any other is a popular art; more than any other it indicates a people's capacity for artistic insight and culture, and seals the record of art's influence on the national mind; and keeping this in view, I think you will agree with me that there is one hindrance to the progress of our art which has hardly received the notice it deserves, namely, the bad effect of every hideous building that is erected. The educative influence of a badly-designed building, in which all taste and propriety is outraged, is probably quite as great as that of a building of artistic excellence, and if our art is making progress at all, we have a right to this consolation at least, that the villanous designs are in a minority. But still, it is a minority so large and so clamorous as to prove eminently obstructive. Now, the reduction of this minority to reasonable limits, so that it shall become comparatively harmless, is a work to which architects can only contribute indirectly, and to a much less extent than might on a superficial view of the case be supposed. I utterly repudiate the idea that the architects of the country are responsible for the monstrosities which shock artistic sensibilities in almost every important town. The responsibility lies with those outside of the profession altogether, and we can do little more in the matter than direct attention to the evil and its cause, and so endeavour to overcome it by means of enlightened public opinion. The assertion that our profession is not to blame for the miserable architectural failures which are so common, is entirely at variance with commonly received and very commonly expressed opinions; but the fact is simply this, that the public do not employ the best architects to do their work, and with them rests the blame. In some towns they ask their town surveyor to do it, however incompetent he may be, merely because he is their town surveyor; experienced architects are deliberately passed over, and the public get what they deserve to get. In others, and indeed everywhere, the designer of almost every building of any importance is selected by competition, and again, the more experienced architects refusing to compete, the work is handed over too often to beginners. I do not refer here specially to competitions of the first magnitude, but to those for buildings costing say from 5,000*l*. upwards,—churches, clubs, schools, blocks of offices, libraries, art galleries, and the like,—the buildings by which the condition of our art is mostly judged. For the designing of these, the ablest artists are not selected; on the contrary, as I have just said, they are practically prevented from having anything to do with such works. It is extremely difficult to convince the public that they are the losers by this. One committee does not gain wisdom from another's experience, but gathers it,—very often sadly,—from its own. Of course, such competitions are excellent things for the younger members of the profession, and sometimes their results are altogether satisfactory; but more frequently, as might be expected, it is the reverse, and our art is thereby hindered, and undeservedly brought into ridicule. Now, observe to lay the blame of this upon our profession, to judge our art by the outcome of such a mode of selection, conducted by such selectors, is as utterly unjustifiable and absurd as it would be to judge of English painting by the "pot-boiler" of a nameless artist, while the works of a Millais or a Leighton were ignored. If you wish a good painting,—a fair specimen of the English school,—you must go to a good artist, and pay him a good price for his work. If you prefer buying something you can get for 1*l*. the superficial foot, admire it and enjoy it as much as you choose, but do not insult the artists of the country, and at the same time proclaim your own egregious folly by holding it up as a typical example of the art of the day. And so precisely it is with architecture. You may go to Mr. A. and get him to design a church for you, although he has never done such a thing before, instead of to Mr. B., who, as you are aware, has spent a lifetime in the enthusiastic pursuit of his art. That is your affair; we architects cannot prevent you doing as you choose, but we can and ought to protest against you or any one else referring to Mr. A.'s deformity as a typical example of British architecture. It is clearly not Mr. B.'s fault if the result gives the enemy occasion to blaspheme; nor can we hope to see anything done towards diminishing the output of bad work, and encouraging the growth of architectural art, until the public entirely change their attitude towards us, and learn to treat our art and our profession as they treat other arts and other professions, giving due deference to the master, and acknowledging the worth of experience. When that is done, when our vestries, and town councils, and committees learn,—as, for the most part, our gentry have learned,—that culture and experience are precious, then, and not till then, may we hope for *progress*, or acknowledge our fault if there is none.

FULHAM INFIRMARY BOARD OF GUARDIANS.

AT the last weekly meeting of the Guardians, Mr. J. Ardin, chairman, the sub-building committee reported that the contractors had furnished an estimate for the heating apparatus for the infirmary of 1,479*l*.; gas-pipes, mains, and fittings, 363*l*. 10s. The same being, in the opinion of the architect and committee, fair and reasonable, the committee recommended the estimates should be accepted. The architect's estimate for the heating apparatus was 1,500*l*.; gas-pipes, mains, and fittings, 500*l*.

The adoption of the report was agreed to.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

THE fifth annual dinner in aid of the funds of this excellent charity took place on Tuesday evening last at the Guildhall Tavern, Gresham-street, the president, Mr. J. Howard Colls, in the chair, supported by master builders and other subscribers and friends to the Institution, to the number of about 130. The loyal and patriotic toasts having been disposed of (Mr. Dove replying on behalf of the Reserve Forces),

The Chairman, in proposing the toast of the evening, "Prosperity to the Builders' Clerks' Benevolent Institution," briefly recounted the history of the Institution. It was, he said, established in 1866, with the object of granting pensions to decayed builders' clerks and their widows, and of maintaining and educating the orphans of builders' clerks. There were at present on the funds of the Institution eleven pensioners, the males receiving 25*l*. per annum and the females 20*l*. per annum. In the year 1868, soon after the establishment of the Institution, 12*l*. 15s. was spent for the relief of applicants. Last year, 220*l*. 16s. 8d. had been so expended. Since the establishment of the Institution, 525*l*. had been expended in presentations to the Orphan Working School. To efficiently maintain the work of the Institution, it was very necessary that the number of annual subscribers should be kept up, and, indeed, largely increased, for annual subscriptions were the backbone of such a society. The Institution was, no doubt, gradually becoming better known to the builders' clerks of London, and it was to be hoped that they would come forward in greater numbers and join it, seeing that it was established for their benefit. Besides granting pensions and maintaining and educating orphans, the Institution granted temporary relief to builders' clerks in distress. One of the most prominent features of the Institution was the great economy of its management. Mr. Wheatley was a most indefatigable secretary, and the way in which he made his work a labour of love could not be too much admired. The members of the institution had much reason for self-congratulation in being so ably served by Mr. Wheatley. In conclusion, the chairman asked the company to drink the toast with a strong determination to make known the claims which the Institution had to the support of builders' clerks generally. He had always regarded a builder's clerk as being a cut above other clerks, and, therefore, he could confidently appeal to builders' clerks to do their utmost to advance the welfare of the Institution.

Mr. Ex-Sheriff Burt, in proposing the next toast, "The Architects and Surveyors," said that builders and builders' clerks were continually coming in contact with architects and surveyors, for whom they felt the highest respect. It was true that they were sometimes apt to think that architects could put up very smart and fine-looking buildings for very little money; that they sometimes fancied that the quantities were taken out rather short; and that when the extras came to be measured up the rods were not allowed to go quite so far as they, the builders, could wish. But it should be recollected that the architects and surveyors had to consider their employers, between whom and the builders they generally struck the line as fairly as possible. The architects and surveyors of London were men of repute and standing, and thoroughly entitled to the respect of the building trade.

Mr. Ellis Marsland responded to the toast.

Mr. E. C. Roe proposed "The Builders." Looking into a little work the other day,—a work which changed its subject very frequently, viz., a dictionary,—he read the following definition,—"Builder. An architect, a shipwright, a mason, &c., &c." Now, he never knew before he referred to that interesting work that a builder was an architect, but no doubt there were builders who would make very good architects; on the other hand, if some architects and surveyors were compelled to be builders for a short time, greater consideration would often be shown by them for builders. Passing by the work of the shipwright and mason, there was the "&c., &c.," which, no doubt, stood for other classes of the building fraternity,—possibly for that very interesting invention of the nineteenth century, the "cutting builder," as he was sometimes called. He was very often a gentleman who knew how to make a very little go a long

way,—one who had solved the difficult problem of making sums varying from 4d. to 1s. 9d. do duty for the current sovereign, and who could therefore undertake to do building work very cheaply. For a job for which a reputable builder (who paid, and meant to pay, his twenty shillings in the pound) would send in an estimate amounting to say 3,742*l.*, the tender of the cutting builder would only amount to something like 1,213*l.* 12s. 11½d., and of course the cutting builder got the job, generally to the subsequent loss and annoyance of owner and architect. It was for architects and merchants to be chary of confiding in such men, who were not entitled to the honourable name of builder, nor to the chance of being confounded in the public mind with men of such repute in the building trade as the Cubitts, the Plucknetts, the Riders, the Burts, the Collses, and the Doves. With the toast he begged to couple the name of Mr. F. J. Dove (Dove Brothers).

Mr. F. J. Dove briefly responded, expressing the pleasure which it afforded him and other master builders to be present and to testify to their indebtedness to their clerks, between whom and themselves there existed a bond of sympathy which was too often lacking between employers and *employés*.

Mr. E. Brooks proposed "The Past-Presidents," coupled with the names of Mr. George Plucknett, J.P., Mr. T. F. Rider, and Mr. T. Stirling, who severally responded.

The remaining toasts were "The President," "The Visitors," "The Ladies," and "The Committee and Officers." With the last-named toast was coupled the name of Mr. Wheatley, the secretary, who briefly replied.

The subscriptions and donations announced during the evening reached a total of 357*l.* 12s. 6d.—a larger sum than obtained on any preceding occasion. The donations included 21*l.* given by the Chairman, 10*l.* 10s. given by the Worshipful Company of Carpenters, and 10*l.* 10s. given by the Builders' Society of London.

INTERNATIONAL ELECTRIC EXHIBITION, VIENNA, 1883.

LOOKING at the announcements which have come in within the last few days, even but superficially, we can state that the International Electric Exhibition in Vienna will not at all be inferior to its predecessors, but on the contrary, will in many respects surpass them. Two countries, Denmark and Spain, have made their appearance of late, and likewise Italy has sent a great many applications. We mention of the exhibitors of the latter State only the Societa Anonisma Generale Italiana dei Telefoni, at Naples, with a rich collection of lighting apparatus and telephones; Alessandro Lucchesini and Jules Lorenzetti, at Florence, with various telegraphic apparatus; Rialti Vincenzo, at Forli, with a great many novelties in incandescent lamps. France promises to send representatives in a most imposing manner.

THE PARIS ÉCOLE DE MÉDECINE.

ACCORDING to the continental press the new building of the Paris École de Médecine in the Boulevard St. Germain, has now been freed from its scaffolding. The façade has forty large-sized windows, and has a massive appearance from the introduction of pillars. The principal entrance is ornamented with two *caryatides*, representing Medicine and Surgery. The building occupies a space of about 140,000 square feet, while the old structure was only about one-fifth of that superficial extent. The building is costing about 170,000*l.*, and the acquisition of the increased site cost 80,000*l.* Allowing for other expenses, the entire cost will be about 275,000*l.*, according to the figures given. M. Ginain is the architect, it is stated.

CHISWICK CHURCH.

FOLLOWING suit after its neighbours at Hammersmith and Kew, the parish church at Chiswick is about to assume an altered appearance. Here, indeed, little but the tower of the former church will remain, for on Thursday, the 8th instant, Lord Edward Cavendish, M.P., laid the foundation-stone of a new building, the chancel being erected at the cost of the Duke of Devonshire, the nave and aisles at that of Mr. Henry Smith, churchwarden, a previous benefactor.* The old church, dedicated to St. Nicholas, consisted originally of a nave and chancel built, mainly of flint and stone, in the beginning of the fifteenth century. To these William Bordall, vicar (who died in 1435), added the tower, of the same materials. The church was afterwards repaired with brick, and two brick transepts subsequently added, which were again extended into aisles in the course of last century. The tower is now surmounted by a spire bearing a figure of the patron saint of fishermen, this part of the river, as we shall notice presently, forming a valuable preserve.

Chiswick lies upon the Roman, or, rather, British, road from Chichester (Regnum), through Staines (Pontes), Brentford, Turnham Green, Stamford Brook, and Starch Green to Shepherd's Bush and Tyburn. In making Goldhawk-road, Shepherd's Bush, the causeway was discovered along its length beneath the surface. A battle is said to have been fought here, at the Back Common, between Eadmund (Ironsides) and the Danes, who were marching along this then the only route into London from the west. The road from Turnham Green towards Knightsbridge does not date from before the close of the seventeenth century. Included in the Ossulstone Hundred, Chiswick comprised two manors, of about 1,150 acres in all, which belonged to St. Paul's, London. Of these, the one was prebendal and the other, Sutton or South Town, a peculiar of the Dean. Though not named in the Domesday Book, Sutton occurs in a list of manors appertaining to St. Paul's, which was drawn up during the deanship of Wulman, a contemporary of William of Normandy. It is mentioned in the capitular survey of Alardus de Burnham, early in the thirteenth century, one of the most ancient surveys of the kind extant; whilst in the cathedral archives there is an agreement of the year 1235 relating to the fish within the manor. By this agreement, made between the Dean and Chapter and the Prior of Merton, the manors of Sutton and Chiswick are allowed to place forty weirs (*burrochas*) for barbel and lamprey only. In the Civil Wars the leases were sequestrated to the Corporation; in 1676 they passed to Thomas, Earl Falconbergh, whose great-nephew, Thomas Fowler, Viscount Falconbergh, assigned them (1727) to Richard, third Earl of Burlington, the celebrated patron of literature and the arts, and friend of Pope. By the marriage of Charlotte, Baroness Clifford, his only surviving child, with William, fourth Duke of Devonshire, the estate passed to its now owners.

The Duke of Devonshire's villa at Chiswick occupies the site of Sutton Court, which, according to Kip's print, would seem to have been built during the reign of King James I. It had been the property and residence of Robert Carr, Earl of Somerset, whose infamous countess died here, says Dugdale, in the year 1632.† It then passed into the possession severally of Philip, fourth Earl of Pembroke; of John, Lord Poulett, the royalist, whom Fairfax, then living at Putney, often visited here;‡ of the Duke of Monmouth; and of Richard, Lord Ranelagh. In 1682, Edward Seymour sold the house to Richard, second Earl of Cork and first Earl of Burlington. For the descendant of the last-named nobleman Kent built the miniature villa, from a design of Palladio, which Lord Hervey said was only too large to hang to a watch. The wings were added by Wyatt. It was here that Charles James Fox died, in 1806, and twenty-one years later George Canning, both in the same chamber, which opens out from the Italian Saloon. Kent's skill as a landscape-gardener is manifest in the pretty grounds, which are further adorned with three antique statues rescued from the rubbish of Arundel House, and a water-gate, by Inigo Jones, removed hither as a gift from Sir Hans Sloane, upon the destruction, in 1738, of old Beaufort House. Of the famous collection of pictures it is unnecessary to say more than that Lord Burlington acquired the "Madonna," by Domenichino, from a convent at Rome, in exchange for a set of marble columns for their church.

Reminiscences of Johnson, Hogarth, Murphy, Zoffany, and Garrick, form portions of the numerous *admonitus loci*. The inscriptions on the monuments in the church to Dr. Rose and John Ayton Thompson (*ætat.* 15) are by Murphy. Garrick composed the epitaphs of Hogarth and the actor Holland, son of a baker in the town. Dr. Johnson was the friend and frequent guest of Dr. Rose, who, on one occasion, when the merits of Scottish writers were in question, reminded Dr. Johnson of at least one Scotchman who he would admit had written well,—Lord Bute when he signed the order for Johnson's pension.* To Rose, too, he gave the well-known refusal to "walk in the grounds of an usurper" when invited by his host (George II. being then upon the throne) to stroll through Kew Gardens. The church contained many curious monuments, one of the oldest being that of Sir Thomas Chaloner and his wife. Chaloner, governor and chamberlain of Harry, Prince of Wales, was knighted by King Henry IV. for his redoubtable service in arms against the French. Here also were buried Lady Charlotte Finch, second wife of Charles, "the proud Duke of Somerset," who, surviving her husband several years, died in 1773 at Sutton Court; Barbara, Duchess of Cleveland, the "beautiful fury" of King Charles II.'s court; Mary, Countess of Falconbergh,† and Mrs. Rich, daughters of Oliver Cromwell; James Ralph, political and historical writer, one of whose poems, "Night," is vilified in Pope's couplet, "Dunciad," book iii. :—

> "Silence, ye wolves! while Ralph to Cynthia howls,
> And makes night hideous.—Answer him, ye owls!"

Kent, painter, architect, and gardener; and Thomas Bentley, partner of Josiah Wedgwood. The house in which Bentley lived, on the main road, carries the bas-reliefs to which he often alludes in his letters to Wedgwood. Chiswick is associated with another gardener,—Sir Joseph Paxton,—who began life upon 12s. a week in the gardens opened here in 1825 by the Royal Horticultural Society. In the churchyard are the tombs of Hogarth, with memorials to his sister Anne, to Jane his widow, and her mother, Judith, relict of Sir James Thornhill;‡ of De Loutherbourgh, R.A.; Sharp, the engraver; and of Fittler, A.R.A. The cenotaph to Ugo Foscolo (whose remains were transferred to the Santa Croce, Florence, a few years since) is the work of Marochetti. Hogarth's house, in the lane called by his name that leads from the town to the Society's gardens, has fallen into a sad state,—a view of it and his "workshop" may be found in Faulkner's "Brentford, Ealing, and Chiswick," 1845. Lord Heathfield lived at Turnham-green; Zoffany, who occupied a house at Strand-on-the-Green, was buried, with Gainsborough, in Kew Churchyard. Thackeray had good warrant for placing "Miss Pinkerton's academy for young ladies" on Chiswick-mall; though the sedate calm and repose of this interesting little suburb had been once considerably scandalised by the temporary sojourn of Rousseau, who came hither to be near Dr. Rose. Barker's Rails and Corney Reach, familiar to University and other boating men, are named the one from the Barker family who had been long settled at Grove House, and the other from Corney House, a home of the Russells from Queen Elizabeth's time. In 1623 Edward, third Earl of Bedford, repaired the churchyard wall, as the inscription runs "for keeping .... the wardrobe of Goddes saintes whose bodies lay therein buried from violateing by swine and other prophanation."§ To what we lately said with respect to the Pest House and the Chiswick Press‖ we may add that amongst the traces of the occupancy of the college-house by the masters and scholars of Westminster School, dating from the transfer of the Manor of Chiswick, under Gabriel Goodman, Prebendary of St. Paul's, to Westminster, of which he became dean in 1570,¶ there existed, for

* The contract for the erection of the building is in the hands of Messrs. Goddard & Son, of Farnham, the amount of whose contract is 12,780*l.* The cost of the works will, however, somewhat exceed this sum, owing to the numerous vaults, the extra concrete fillings, and increased depth of foundations. The architect is Mr. J. L. Pearson, R.A., and the clerk of the works Mr. J. Griffiths, of Edmonton. The new structure is designed in the Early English style. It is expected the work will be completed by October next.

† See also Weldon's "Court of James I.," p. 113.

‡ "Present Occurrences," Aug. 6-13, Sept. 10-17, 1647.

* Boswell doubts the genuineness of this: and says that Johnson replied, when told by him of Dr. Rose's retort, "If he said this, I did not hear him."

† See *Builder*, p. 225 *ante*, (Feb. 17).

‡ The tomb bears an escutcheon of Hogarth's coat o arms (az: a sun in splendour) impaling those of Thornhill (arg. a chevron gules between three black birds).

§ The inscription speaks of him as Duke of Bedford; but the family did not achieve ducal honours until 1694.

‖ See *Builder*, p. 68, *ante* (Jan. 20),—"Dying London."

¶ Lansdowne MS. 4, art. 12.

many years, the carved names of John Dryden and him of whom Tickell speaks as Addison's "lov'd Montague."

MACHINE TOOLS.

THE INSTITUTION OF CIVIL ENGINEERS.

At the meeting on the 6th of March, Mr Brunlees, president, in the chair, the first paper read was "On the Productive Power and Efficiency of Machine Tools, and of other Labour-saving Appliances, worked by Hydraulic Pressure," by Mr. Ralph Hart Tweddell, M.Inst.C.E.

The author stated that some years ago he had occasion to design a machine, which was required to exert a great pressure in a confined space at a considerable distance from any shafting. The machine had to be portable, and to be capable of doing a large amount of work efficiently without the intervention of skilled labour. Such conditions were of common occurrence, and in this instance all were successfully fulfilled by the employment of hydraulic pressure. The paper was an amplification of the subject of the application of this power to actuating machine-tools and other labour-saving appliances in engineering works, and was divided under three heads, namely,—the introduction and development of hydraulic-pressure machine-tools; the productive power and efficiency of machine-tools generally, and the modes of increasing them; and the increased productive power and efficiency obtainable by the employment of hydraulic-pressure for working machine-tools and other labour-saving appliances. Reference was made to the unpublished experience existing on these questions.

Under the first head, an illustration was afforded by a small portable hydraulic apparatus for fixing the ends of boiler-tubes in tube-plates, the pressure of water employed varying from one to one and a half ton per square inch. Owing to the introduction of high steam-pressures, the scantlings of marine boilers had to be considerably increased, but the mechanical riveting-machines formerly in use were mostly inadequate to make steam-tight joints. In 1865 the author designed a hydraulic riveting-plant to overcome the difficulty. It consisted of pumps, an accumulator, and a riveting-machine, and in operation was seven times more economical than hand-work; moreover, its surplus power was available for hydraulic presses for "setting," or joggling, angle and tee irons. In action it was found that the material was much less strained, and that the wear and tear of the moulds and dies was greatly reduced, besides which the machines were movable. Previous attempts to perform similar work by portable machines driven by steam had not been very successful. This, it was believed, was the first hydraulic-pressure riveting-machine which could readily be applied at different points and over considerable areas, and at the same time maintain an uninterrupted connexion with the accumulator-pressure in the mains. The system had been extended to machinery of sufficient gap to span the deepest girders, the same hydraulic power which actuated the heavier machines being utilised for lifting them. The water driving these machines and their lifting apparatus was supplied under a pressure of 1,500 lb. per square inch. Amongst the first to employ them was the firm of Sir William Armstrong & Co. Several instances were then given of their application: for riveting *in situ* the lattice-girder bridge which carried Primrose-street over the Great Eastern Railway at Bishopsgate-street Station; for riveting locomotive boilers; for fastening rivets in gun-carriages and in agricultural machinery; for railway wagon-work, and for riveting ships. The substitution of hydraulic machinery for punching and shearing metals had been more gradual, but it had proved economical, and had been employed for shearing the links of chain cables, 3 in. in diameter, both sides at one time.

As to the productive power and efficiency of machine-tools generally, and the mode of increasing them, the author observed that the cost of manufacturing depended upon the productive power of the tools employed, and upon the possession of facilities for transporting the material to and from them. Ample lifting and transporting arrangements should be provided in all cases. At present a large amount of lifting was done by manual labour, in which there was room for great improvement.

On the third head, namely, the increased productive power and efficiency obtainable by the employment of hydraulic pressure for working machine-tools, the author observed, that so far as the prime mover was concerned, the power necessary in a hydraulic system to pump water into the accumulator was nearly always obtained from a steam-engine; but even at this early stage the hydraulc system, by the use of the accumulator, allowed of a considerable reduction in the size of the motor. A comparatively small prime mover running continually, stored up sufficient energy to meet any sudden demand from even the largest of the machines worked from it; while, on the other hand, the prime mover would have to be equal to this. This defect was to a small extent met by the use of fly-wheels, which were, however, objectionable from their liability to accidents, and from the strains to which the shafting was subjected. From 200 to 300 blows per minute had been obtained in hydraulic machines, and in machine-tools and cranes the accumulator acted as a perfect safety-valve. Then, for the transmission of power to points distant from the prime mover, hydraulic pressure was the most economical. By the use of hydraulic mains laid underground, all overhead shafting was dispensed with.

The next question was as to the suitability of hydraulic pressure to actuating the tools. It had already been employed for slotting and planing machines, and its application to rotary machines might even become as economical as any other. The simplicity and fewness of parts in all hydraulic machine-tools was a source of great economy. In respect to the economical application of force through each individual machine when performing such an operation as punching, the machine was moving at its lowest speed, and friction was at a minimum when most work was being done. Again, hydraulic machines consumed no power except when actually doing work, while it was not unusual in a machine-shop to see all the shafting running in order to drive a small tool at its extremity. He thought that even small firms might find it advantageous to combine in the erection of a common pumping-station, and so to obtain many of the economical benefits due to carrying out operations on a large scale.

EXHIBITIONS.

At Boston, in Massachusetts, a so-called "Grand Foreign Exhibition" is announced to be opened on September 1st next. The building, which is already erected, has cost half a million dollars. The consuls-general of the United States in the various European countries are inviting foreign manufacturers to apply for space. The articles to be exhibited are to be exclusively of foreign production, and it is the products of art industry which it is more particularly desired to have represented. One novelty in the enterprise will be the delivery of series of lectures on various branches of art manufactures, and the opening of a public discussion at the conclusion of each address. The building will be open at night as well as day, and will be lighted by electricity.

An International Horticultural Exhibition opens at St. Petersburg on the 17th of May; an International Agricultural and Horticultural Exhibition at Lisbon about Midsummer, and an Exhibition of Manufactures, Arts, and Agriculture at Zurich on the 1st of May.

The International Colonial and Export Exhibition at Amsterdam, which the King of the Netherlands has promised to open in person on the 1st of May, will have separate sections, under the titles of Colonies, Articles of Export for Colonies, Objects of Art and Antiquities of Colonies. Under the first head there will be lectures and discussions, and the section will be sub-divided into three groups. The first will deal with the character of colonised countries, including their geography, geology, and mineralogy, their native animals and plants and their anthropology. The second group will deal with the present native populations of colonies, their statistics, domestic and social life, means of living, art, science, religions and religious customs, and their forms of Government. The third group will treat of the European settlers in colonies, and their relations towards the aboriginal races, including accounts of explorations and expeditions into unknown tracts, the various colonial systems and their results, the naval and land forces, public works, postal and telegraphic systems, commerce and shipping, agriculture and manufactures, domestic and social life of the European settlers, education, and scientific researches. Under this head alone a mass of materials will be brought together, such as has never before been attempted, and such as cannot fail to prove of the widest interest.

THE BRICKWORK OF CHIMNEYS.

In a communication to the *Deutsche Bauzeitung*, Herr Eckhartz has expressed his opinion that the cause of crevices being formed in the brick-work of chimneys is the difference of temperature between the inner and outer surfaces. While in many cases in an ordinary factory chimney the mantle has internally a temperature of nearly 600° Fahr., the external temperature is only about 60° on an average, the difference of extension which is thus occasioned producing the cracks referred to. He dwells upon the use of iron hooping, and remarks that its object and result are not, strictly speaking, the prevention of extension, but rather the attaining in the outer brickwork of a uniform distribution of the tension, and the prevention of its concentration at certain points.

The question whether wrought-iron rings in the inside of a mantle are liable by their own extension to produce cracks, has been for some time under discussion in German technical circles. A short time ago, Dr. Tomei recorded in the journal referred to, his opinion that the binding of chimneys by means of iron inside the masonry was a measure only to be recommended in exceptional cases, and with the observance of special care in its execution. He considered that the external binding of brickwork was, however, a question which was to be regarded in a different light.

Herr Eckhartz, though not founding his remarks exactly on those of Dr. Tomei, further illustrates them by saying that if ironwork placed internally fails to prevent cracks, and even produces them, its employment in that way is not only superfluous, but injurious. If rightly constructed, he considers that for resisting the effects of the wind, no hooping is required by a chimney. In further elucidation of the theory that internal hooping is unsuitable, he remarks that the ironwork should, as a matter of course, not be exposed to a high temperature; and he maintains that all rings inside masonry must, under these circumstances, be subjected to the influence of heat. If they have not sufficient space for their extension, they exercise a pressure upon the external brickwork, and thereby produce cracks.

From the facts thus quoted, Herr Eckhartz deduces the recommendation that in order to provide against the results of the difference in temperature to which allusion has been made, double walls should be constructed. He refers to the chimneys for circular furnaces which have been designed on this principle by Herr Hoffmann. He uses double mantles, each only half a brick in thickness, which are united by vertical ribs of the same thickness. Inside the chimney is an isolated mantle, half a brick thick, which is built up to the height of 11 to 22 yards, according to temperature ruling in the chimney. This mantle is exposed to the most intense action of the heat, and from the nature of its construction is not injuriously affected by any extension which takes place.

Herr Eckhartz claims for this method of construction the subsidiary advantage of economy in fuel, and adds that his personal experience confirms him in the opinion that it is the only system by the use of which iron hooping can be completely dispensed with.

AN ENGLISH CHURCH AT BERLIN.

In commemoration of the Silver Wedding of the German Crown Prince and Crown Princess, and under the patronage of the Princess herself, a movement has been made in Berlin for the erection of a new church for the use of the English residents in the German capital. A committee has already been appointed, and a subscription opened. It is contemplated to erect an edifice in the Gothic style, capable of seating 300 to 350 persons, and to cost about 5,000*l*. The committee has issued an appeal to the English Colony in Berlin and others to contribute to the fund. The treasurer is the English Consul-General, Herr von Bleichröder, Behrenstrasse 63, Berlin.

AN ACCOUNT OF THE ARCHITECTS' BENEVOLENT SOCIETY.

REPORT OF THE COUNCIL, 1883.

In making their Annual Report the Council of the Architects' Benevolent Society have the satisfaction of stating that during the year 1882 the relatively large sum of 527*l.* has been distributed among thirty-six applicants for relief, and that the total expenses of collection, distribution, &c., have been only 14*l.* At no other period of its existence has the Society been in a position to expend so large a sum in grants and pensions, the largest amounts thus expended in former years having been 443*l.* in 1877, 421*l.* in 1881, and 395*l.* in 1879. At no other period have the working expenses been so small, though this is partly due to the fact that the Hon. Secretary's work is done principally in the office of the Royal Institute of British Architects, and that the reports, &c., relating to the business of the Society are published in the Institute Journal of Proceedings, whereby a portion of the postage, stationery, and printing, which would otherwise have to be paid for, is provided by the Institute. The chief item of reduction is due to the general use of bank orders recently issued, by which means the annual subscriptions, instead of being collected by an officer of the Society, are paid by subscribers' bankers direct to Messrs. Herries, Farquhar, & Co., a change of procedure which has not caused any diminution in the receipts. On the contrary, the total of subscriptions received during 1880-1-2, when no collector has been employed, has reached the sum of 990*l.*, against a total during the three previous years, when a collector was employed, of 955*l.* Further, the Council are enabled to add that at the close of 1882 the Society's capital had reached 5,550*l.*, while a sum of more than 90*l.*, received in donations during that year, remained to be invested. With these facts and the experience of former years before them, the Council desire to make perfectly clear their position with regard to the Institute, which, as far as it reasonably can, now houses and, as before mentioned, assists the Society. They desire not only to place on record their own sense of indebtedness to the members generally of the Institute of Architects, but also to invite the annual meeting of the Society's contributors to express that indebtedness in a cordial vote of thanks to the corporate body of the profession.

While, however, giving due expression to the manifest improvement in the Society's affairs, and pointing with satisfaction to the extended sphere of usefulness which belongs to it in the silent exercise of its charitable functions, the Council see with deep regret the partial and incomplete manner in which the architectural profession is represented in the Society; they see with regret the inadequate support given to it by architects and surveyors of influence and even wealth, and they deprecate the marked abstention from the ranks both of donors and subscribers of many well-to-do professional men, some of whom, in answer to appeals personally made to them, have replied that another and far richer charitable body which also relieves architects has a prior claim to the small assistance they can afford. That body, the Artists' General Benevolent Institution, is an excellent one and worthy of support, but its funds are closed to the majority of architects and surveyors, their widows and orphans. That is to say, the restrictions imposed by the Artists' General Benevolent Institution, in nine cases out of ten, deprive the poorer class of the profession from all chance of obtaining relief from it. Such applicants have no resource at a time of distress but an appeal to individual practitioners, or to the Architects' Benevolent Society, in which no restrictions to the distribution of relief exist other than that the applicants must be of good moral character. Both architects and surveyors are relieved. In the case of practitioners or their assistants they must be known to have been honourable in their practice, and to have been duly educated in an architect's or a surveyor's office, or they must have produced an invention or a work of art; while in the case of widows and orphans they have to give satisfactory evidence of their identity in relation to an architect or a surveyor. The Council earnestly call upon contributors and others to make these facts more generally known than they are, and to destroy the erroneous impression that this Society has undertaken a superfluous task, or one by which it is placed in opposition to another and a larger body of associated painters, sculptors, and architects. Your Council recall the words of the founders in the year 1851. In the Red Book then issued, containing the first annual report and list of contributors, there occurs a prefatory paragraph which runs thus:—"Literary men, artists, and many other classes and profession, dependent for their livelihood on profits of uncertain attainment and precarious tenure, have formed themselves into societies of this nature with the happiest results, but Architecture, the eldest of the Fine Arts, has yet to be moved to associate in this good work. She has had the good fortune to be made subservient, in many noble monuments of piety and charity, to the benevolence of others; it is time that she should give proofs, in her corporate character, of the same beneficent spirit. No society, framed on these principles and specially devoted to the interests of the architectural profession, has yet been established, and it is in order to remove this reproach that the present appeal is now made to its members. It needs only a slight acquaintance with the profession to satisfy us that such an institution is urgently required. The frequency of private applications for individual relief too certainly proves its necessity, and the sad experience, which brings too often under our notice the struggles of genius and talent with undeserved misfortune, will not permit us to defer any longer the duty of soliciting your friendly co-operation." The time has again come when it is necessary, in the opinion of your Council, to make another urgent and reasonable appeal to that large majority of professional members of the Royal Institute of British Architects which ignores not only the claims but the very existence of this Society. It is too generally forgotten that small sums from many donors often afford a larger and certainly a more satisfactory total than a few comparatively munificent gifts. At the present moment the Institute numbers about 1,100 professional members, and of these only 226 contributed during the year 1882 to the funds of the Society. As a corollary to this your Council have constantly to respond to an urgent appeal, personally known to be genuine, and often the result of undeserved misfortune, by the grant of a ten-pound note, instead of the fifty pounds that they feel ought to be at hand to meet the case.

It will not be unprofitable to glance at the past. In the early days of the Society's existence the trustees were the three Academicians, Barry, Cockerell, and Hardwick. Sir Robert Smirke was a "Patron." Sydney Smirke, the first president, continued to take the chair at your annual meetings until 1874, and his death occurred in 1877, when he was succeeded by the late Thomas Henry Wyatt. Amongst the earliest members of the Council were Poynter, Pennethorne, Salvin, Henry Ashton, Sir Gilbert Scott, Sir Digby Wyatt, and Benjamin Ferrey. The damaging argument, even now sometimes used, that there is something derogatory to the profession in the existence of an Architects' Benevolent Society was neither ignored nor unappreciated by its founders, whose most earnest efforts were directed to strengthening the Society, appealing as they did in 1854, not for its mere silent acquiescence in the work of the Council, but for its active co-operation "in making perfect," to use their words, "the good work which has been so auspiciously commenced." The character of that work is perhaps not known to the general body of the profession. Some statistics may therefore serve to show in a practical business-like fashion the progressive though slow advance which it has made in power and usefulness. Thus:—

Year.	Donations.	Subscriptions.	Expenses.	Pensions and Grants.	Amount of stock.	REMARKS.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	
1850	308 15 0	78 13 0	80 3 0		303 0 8	First Annual Meeting, 27th Nov., [1850.
1851	107 12 0	67 4 0	48 10 0	10 0 0	...	
1852	59 16 6	184 16 0	62 14 10	55 0 0	...	
1853	59 18 0	176 6 0	51 8 11	105 0 0	...	
1854	20 9 0	165 17 0	45 17 3	187 10 0	...	
1855	81 1 0	174 2 0	55 0 7	170 0 0	...	Corr. Members of Council appointed.
1856	77 1 6	167 9 6	42 5 9	170 5 0	...	
1857	75 11 7	175 6 0	48 9 0	135 0 0	...	
1858	75 3 0	177 2 0	48 7 11	63 0 0	...	
1859	43 11 6	165 17 0	47 8 10	185 0 0	...	
1860	78 15 0	144 16 0	43 19 10	83 0 0	993 9 6	
1861	84 15 9	166 18 0	53 13 0	121 6 0	...	New Collector appointed.
1862	67 12 6	105 0 0	32 2 2	175 0 0	...	
1863	31 10 6	229 19 0	77 3 5	258 0 0	...	
1864	73 3 6	172 4 0	48 8 5	120 0 0	...	
1865	25 4 0	169 1 0	31 18 0	170 0 0	...	
1866	30 13 6	178 10 0	56 16 9	200 0 0	...	
1867	36 0 0	184 14 0	75 6 0	192 0 0	...	
1868	83 9 0	204 15 0	47 11 1	144 0 0	...	
1869	82 4 0	198 9 0	107 6 4	150 0 0	...	
1870	64 6 0	195 6 0	82 2 8	214 0 0	1,596 9 6	Appeal made to the profession.
1871	102 9 0	214 2 0	91 14 10	163 0 0	...	
1872	74 6 0	209 19 9	74 3 1	190 0 0	...	
1873	216 10 0	209 15 0	88 2 4	235 0 0	...	
1874	287 9 0	212 7 6	74 2 3	277 0 0	...	
1875	86 9 6	226 11 0	77 3 11	318 0 0	...	[*Hon. Sec.*
1876	98 1 6	220 5 0	83 5 8	287 0 0	...	Resignation of Mr. Turner sen.,
1877	394 1 0	318 17 9	134 15 6	443 0 0	...	Successful appeal to the profession.
1878	208 4 6	314 4 3	74 3 4	380 0 0	...	Mr. C. C. Nelson bequeathed £100.
1879	2,603 13 11	323 3 0	85 17 0	395 0 0	...	Mr. J. Johnson bequeathed £1,000.
1880	134 12 0	315 0 6	50 8 4	385 0 0	5,336 9 11	Mr. T. H. Wyatt bequeathed £100.
1881	96 0 7	305 7 0	39 18 5	421 0 0	...	
1882	91 8 0	370 3 0	14 1 4	527 0 0	...	

The Society began with the wholesome rule of funding all donations, and for nearly twenty years this was regularly done; but in 1869 it was decided to invest annually only a moiety of the donations, the other moiety being expended in grants to applicants, and in current expenses. A reversion to the original rule took place in 1879, and your Council trust that the custom of funding all donations, unless otherwise directed by the donors, will be rigidly adhered to in the future. At present a donor, however small his gift, has the satisfaction of knowing that it must accrue to the permanent benefit and usefulness of the Society as an instrument of charity. On the other hand, a recent alteration has proved beneficial to many. Originally the distribution of the income to applicants for relief took place twice a year, in January and July, but relief is now distributed throughout the year, and during 1882-83 your Council have held six meetings for the purpose.

The income account and the balance-sheet for the year 1882 are herewith submitted. They have been audited by Mr. William Hudson and Mr. Lewis Solomon, to whom the thanks of the Council are due.

A very promising feature of the support given to the Society is to be found in the donations presented to it at different times by various bodies not all connected with the profession of architecture, or in relation with architects. The Worshipful Company of Dyers, and the Worshipful Company of Merchant Taylors, together with the Architectural Union Company, and the Incorporated Church Building Society, have been donors. Among the various architectural societies, located in provincial centres, three are donors, namely, those of Birmingham, Liverpool, and Nottingham, while the last named now sends an annual subscription. The Northern Architectural Association also subscribes, and there is every reason to believe that the other non-metropolitan architectural bodies would, if asked, be glad to support the Society, seeing that its funds are open to applicants from all parts of the United Kingdom. In furtherance of this purpose it is proposed to re-establish the relations which existed some years ago between the Society and a certain number of gentlemen who, in different parts of the country, acted as Corresponding Members of Council. In 1859 these gentlemen numbered as many as twelve, and there is every reason to believe that each of the non-metropolitan Societies of Architects would, if appealed to, be happy to nominate a local representative to act on behalf of the Architects' Benevolent Society. Moreover, it is felt that an application to some of the great City Companies, and even to the Corporation of London, might be attended with not unfavourable results. The object to be kept in view is the accumulation of enough capital to secure an annual income sufficient to meet the more pressing demands made upon the Society, and those who have its welfare at heart cannot serve it better than by exerting whatever legitimate influence they possess in obtaining donations and legacies, or at least the promise of legacies. One contribution received only last month has afforded your Council much gratification, and the circumstances connected with it are both interesting and peculiar. An architect, Mr. Robert Palgrave, of Upper Hamilton-terrace, N.W., had caused a codicil to his will to be drawn, by which the sum of 1,000*l.* was bequeathed to this Society, but before the codicil could be executed he died. By his will the residue of the property was left to his two nephews, only one of whom is yet of age, and this gentleman, Mr. Samuel Palgrave Page, has just paid into the Society's account his own moiety of his uncle's intended legacy,—an honourable act which cannot fail to touch the hearts even of those who have never felt that it is more blessed to give than to receive, while it must especially gratify the contributors for whom your Council are now acting, and who will know how to welcome and appreciate the generosity of a young, high-minded man.

THE STREET MEMORIAL.

On Tuesday afternoon his Royal Highness the Prince of Wales was present at a meeting of the committee formed for erecting a suitable memorial to the late Mr. George Edmund Street, R.A., in the Royal Courts of Justice. The Right Hon. A. J. B. Beresford-Hope, the chairman of the committee, presided, and there were also present:—The Right Hon. G. J. Shaw-Lefevre, M.P.; Mr. A. B. Mitford, C.B.; Mr. H. T. Wells, R.A.; Professor Lewis, Mr. David Brandon, Mr. James Brooks, Mr. Joseph Clarke, Mr. George Godwin, Mr. John Marshall, Mr. Reginald Wilberforce, the honorary treasurer, Mr. Alfred Waterhouse, A.R.A., and the hon. secretary, Mr. Arthur Blomfield. The meeting was held at the studio of Mr. H. H. Armstead, R.A., who exhibited a model of the proposed memorial. After inspecting this and a more elaborate, and, in many respects, better design originally prepared, but impracticable with the funds as yet subscribed, the Prince of Wales proposed the following resolution, which was seconded by letter by Sir F. Leighton, P.R.A., and carried unanimously:—"That this meeting approves Mr. Armstead's design for the Street Memorial, and authorises the sub-committee to make arrangements with him for carrying it out for a sum, if possible, of not less than 2,000*l.*, subject to such modifications as may be deemed advisable in the pedestal."

A vote of thanks to his Royal Highness for his presence and valuable assistance having been proposed by Mr. Shaw-Lefevre, and carried *nem. con.*, the proceedings terminated.

The design consists of a life-sized figure of the architect, seated, and at work on a plan, which lies unrolled across his knees. The idea and treatment of this part of the memorial met with general approval, but it was felt that the treatment of the base or pedestal on which the figure rests has suffered from want of means, and that a strong effort should be made to obtain additional and increased subscriptions to enable Mr. Armstead to carry out this portion according to his original conception. To accomplish this a further sum of about 600*l.* will be required.

Manitoba.—The following is taken from the *Winnipeg Weekly Times*:—"The Dakota and Minnesota papers take considerable pride in lauding their climate, and decrying that of the Canadian North-West. But the fact remains, that while we are enjoying fine winter weather,—cold, clear, and healthful,—they are 'doubled up' in one of the most dreadful storms that ever visited them. Their railroads are blocked so badly, indeed, that they can with difficulty procure coal for the locomotives. Here, the C. P. R. is open and in excellent running order from one end of the western division to the other. Of the ninety-two locomotives on this division, only seventeen are in the repair shops. Everywhere the road is being operated satisfactorily, while our cousins to the south can neither travel by rail nor sleigh. In the matter of climate as in the matter of soil, Manitoba leads the American North-West."

HEALTHY HOUSES.

YORK ARCHITECTURAL ASSOCIATION.

AT the last meeting of this Society, held in the saloon of the Victoria Hall, Mr. J. Lawton Webster, Borough Surveyor of Malton, delivered an address on "Healthy Houses: and How to Make Them." There was a good attendance.

Mr. Webster, during the course of an interesting address, said that sweetness and light were the Alpha and Omega of a healthy home. Without sweetness, man lost his health and vigour, became weak and incapacitated for work, and eventually fell a victim to disease and death. Without light he lost his manhood, became deformed both in body and mind, and ultimately he passed from this world without having made any advancement either socially or morally. The speaker said that no punishment could be too severe for a man who would endanger the lives of his fellow creatures through negligence in drainage; and in referring to the over-crowding of dwellings, he said that few people had any conception, except those whose duties brought them within the range of this subject, as to the evils arising from overcrowding. Parents and children were packed into a room as herrings in a box, and he could tell them of one case he knew of where three or four up-grown persons, along with half a dozen children, were housed up in one small room. This was a sad state of things, and the question of better accommodation for the poor, he said, would sooner or later be taken up by the Legislature, and until then sanitarians and such associations as the York Architectural Association must labour on and on and endeavour to wipe out the stain, which was a standing disgrace to the country at large. But all would be of no avail unless the householder himself put his shoulder to the wheel and helped on this great question of the day. The ball had commenced rolling, and was daily increasing in size and importance. Architects, who had hitherto been indifferent and sceptical, were veering round to the side of sanitary progress; they combined more readily with sanitarians in the great work which they had at heart. They had at last been convinced that the fixing of a soil pipe was as important as the tracery of a window, and the laying of a drain as the symmetry of an arch. Public authorities were at last becoming alive to their great responsibilities. In large towns the zymotic death-rate was already decreasing, for according to the Privy Council returns, in twelve large towns alone there was a saving of life from 2½ to 32 per cent.; a reduction of the typhoid fever rate of from 10 to 75 per cent.; and pulmonary complaints 11 to 49 per cent. The press was making its mighty voice heard, and the sanitary wave all over the country was moving slowly but surely. The cry was,—no foul middensteads, no rivers polluted, no overcrowding of courts and dwellings, no atmospheres contaminated by smoke,—but let us breathe air pure and unpolluted, and admit the same into our sewers so that it may dilute the insidious and fatal gases; oxidising the foul matter instead of permitting it to enter into putrefaction, and thus cause disease and death.

SEWERAGE AT SLOUGH.

MR. A. J. SOUTHEY, Medical Officer of Health for the district of the Slough Urban Sanitary Authority, in his annual report, just issued, says that several inspections as to nuisances were made during the year, the details of which were given in his monthly reports to the Authority. The nuisances that occurred were principally caused by defective drains and overflowing cesspools, and were abated by the owners of the several properties by connexions being made with the new system of sewers, the cesspools being emptied, cleaned, and properly filled up with deodorising materials. Mr. Southey now believes that there are few houses in the district which are not properly drained, with efficient ventilation. The new system of drainage, which was commenced in 1878, is the most important work, in a sanitary point of view, that has been carried out in the district for years, and has been for some time in full operation. It is on what is known as the "separate system," new pipe sewers having been laid for the sewage disposal, the old pipe sewer,—laid some twelve years before,—being used for discharging the surface-water drainage. The large tanks into which the sewage flows by its own gravity are situated in the enclosed portion of a field adjoining the railway, about a quarter of a mile from the village of Chalvey. From these tanks the sewage is forced by engines through a 9-in. rising main of iron pipes to suitable land at Dorney, about a mile and a half westward of the pumping-station. The population now connected to the sewers is estimated by Mr. Southey at 5,100, and the normal flow of sewage is estimated by him at 65,000 gallons. The area of the land acquired by the Board at Dorney is 25 acres, one-half of which has been laid out for irrigation, about 8 acres being actually in use. The subsoil of the ground is gravel, and Mr. Southey states that the sewage disappears within a very short time of its application without offence or nuisance of any kind. During the early part of the past year serious complaints were made of the nuisances arising from bad smells from the manholes and ventilators of the new sewers, but these nuisances have disappeared since better ventilation has been secured by connecting the sewers with vertical pipes, which are fixed in the most suitable and convenient places to some of the houses, with Boyle's patent Archimedian screw cowls on the top. In some instances where lamp-posts are safely situated away from windows of dwellings iron ventilating-pipes, about 3 in. in diameter, are connected from the sewers, discharging at the top of some of the lamps. This system of ventilation appears, Mr. Southey says, to have completely removed the cause of former complaints, and the original ventilators,—which were street gratings over the sewers,—have been sealed.

THE ASS'S EARS OF THE PANTHEON.

THE Roman journal *La Stampa* recently announced in jubilant language that the two well-known bell-towers, which were a late addition and a great disfigurement to the Pantheon, were to be pulled down, and that the work of demolition has, in fact, already commenced. It was to these unsightly structures that Bernini applied the appropriate title which has ever since stuck to them of the "Ass's Ears" of the Pantheon. It has long been recognised that these two towers, which were only put up in order to receive a few useless jangling bells, seriously impaired the monumental character and effect of the noble edifice. The work of removal was decided upon by the Italian Minister, Signor Baccelli, whom the Roman paper gratefully describes as "the restorer of the monumental character of the Pantheon."

ROOFING-LINEN.

ACCORDING to the *Deutsche Bauzeitung*, a new covering material called "roofing-linen" has been introduced, which is about half the thickness of good *carton-pierre*, and consists of a layer of coarse linen which lies between two layers of thin roll-paper. The cohesion of the three layers is effected by an asphalte composition of special make, called "roofing-paint." It is stated that this paint should be freely applied to roofs immediately after their completion, and again about six weeks afterwards. This operation should, it would seem, be repeated every few years. The linen costs about 10d. to 11d. per square yard, and the paint 10s. to 11s. per cwt.

Although this new method appears to have points which deserve commendation, a real estimate of its value cannot be formed until the material has been exposed to the test of several years' use.

SANITARY INSPECTION AT COVENTRY.

IN his annual report on the sanitary condition of the city of Coventry Dr. Fenton, the Medical Officer of Health, states "that when the present sanitary inspector (Mr. Booker) was appointed it was found requisite to institute a new method for the more efficient inspection of the district, and to account more satisfactorily for the work done; that work of reorganisation was, with the assistance of the inspector, immediately carried out, and testimony is given by the Medical Officer to the very energetic and able manner in which the inspector has performed his duties since his appointment. Mr. Booker's report shows that a much greater advance has taken place during the past year than for many years previously. The scavenging and cleansing of the city generally, and the removal of nuisances and filth collections, which do so much to pollute the atmosphere and render city life unwholesome, have been carefully attended to. The town drainage and water supply have been largely extended to properties hitherto neglected in this respect, and much good and useful work has been performed, which in the future must bear good fruit in elevating the sanitary condition of the district, and improving the health of the inhabitants."

THE DRAINAGE OF AMSTERDAM.

HERR BAAKS lately reported to the Hanover Architects' Association that at Amsterdam the fœcal substances from the dwellings of 30,000 persons are carried away, in accordance with Liernur's method, by four provisional systems of pipes, and are brought to Zeeburg by barges in order to be made into compost. This arrangement is said to have worked so well that its more extensive application is contemplated. The financial success of the system depends, it is remarked upon the question whether poudrette can be made in the vacuum evaporating appliances at an expense of 5s. 3d. to 6s 6d. per cwt. of the prepared substance.

LIABILITY OF GAS COMPANIES FOR ACCIDENTS.

HORNBY *v.* THE LIVERPOOL UNITED GAS COMPANY (LIMITED).

THIS was a special case stated to raise the question whether a gas company were liable for an accident under the following circumstances:—On the 13th of September, 1881, the company employed workmen to break up a portion of the road in Dale-street, Liverpool, in front of the plaintiff's house, for the purpose of laying gas-pipes. The road was a paved one, and the stones lay on a bed of concrete, and it was necessary, after removing the stones, to break the concrete. In the process of the work a stone or piece of concrete flew with sufficient violence to break a plate-glass window in the plaintiff's house, at a height of over 7 ft. from the level of the road, and a distance of 14 ft. 6 in. from the spot where the men were at work. The case stated that no more force than was necessary was used, that the ordinary method of doing the work was employed, and that no such accident had ever occurred before. The company denied their liability to make good the damage done, alleging that the facts stated did not show any negligence, and that the case was not within Section 6 of the Gasworks Clauses Act, 1847, which empowers a company to open and break up the soil and pavement of streets in the execution of their works, doing as little damage as possible, and paying compensation for any damage which may be done. Mrs. Hornby was insured in the National and Provincial Plate Glass Company, who brought this action in her name. The case came before Mr. Justice Cave and Mr. Justice Day (Queen's Bench Division) on Monday, the 5th inst., and was reported in the *Times*.

Mr. Justice Cave gave judgment for the plaintiff, saying that the act of the company in breaking up the street in question was one which they had no right to do at common law, and that, therefore, if they had done it without statutory powers, and in doing it had caused damage to the plaintiff, she would have had a right of action. This being so, an Act of Parliament was passed incorporating the Gasworks Clauses Act, making it lawful for the gas company to break up streets, but that Act contained a clause enacting that the gas company should make compensation for any damage that they might do in executing the works authorised. It had been held that in such cases where damage resulted from an act done by a company which, but for their statutory powers, would give the plaintiff a cause of action, such an act was within the compensation clause. His lordship said he could find nothing in the statute to allow the gas company to break windows without giving compensation, and upon the construction of the Act gave judgment for the plaintiff. Upon the question of negligence, his lordship said upon the facts stated it appeared to him that there had been negligence, but he did not base his judgment on this ground.

Mr. Justice Day concurred.

St. George's Hall, Liverpool.—The proposal to commence the execution of the bas-reliefs here, for which designs were obtained by competition, is postponed for a time. Why?

ARCHITECTS' BENEVOLENT SOCIETY.

ANNUAL MEETING.

The thirty-third annual meeting of the Society was held on Tuesday evening last, in the rooms of the Royal Institute of British Architects, Conduit-street, Mr. John Whichcord, President of the Society, in the chair.

The adoption of the report of the Council (which we print *in extenso* on p. 363), together with the balance-sheet,* was moved by Mr. Edwin Nash, who spoke of it as being one of the most satisfactory in the history of the Society. Nevertheless, it was necessary for the friends of the Society to make increased efforts to bring its claims before the members of the profession.

Mr. E. N. Clifton having seconded the motion,

Mr. H. H. Collins deprecated the employment by the Council of the Society of the services of the officers of the Charity Organisation Society in making inquiries as to the antecedents of applicants for relief.

The Chairman explained that the Council in certain cases felt compelled (having due regard to the careful and scrupulous administration of the funds of the Society) to institute some very delicate investigations, and in such cases the Charity Organisation Society had rendered substantial assistance.

The motion for the adoption of the report and balance-sheet was unanimously adopted.

On the motion of the Chairman, a cordial vote of thanks was given to the Royal Institute of British Architects, for the valuable aid given by it to the Society in the way of office accommodation, printing, &c.

Another resolution, moved by the Chairman, was passed, expressing the Society's thanks to Mr. Palgrave Page for the generous manner in which he had carried out his uncle's intentions with regard to the Society.

Mr. J. P. St. Aubyn moved a vote of thanks to the Council, officers, and auditors for their services to the Society during the past year.

Mr. Wyatt Papworth seconded the motion, which was heartily agreed to.

The Chairman, in expressing his acknowledgments, referred to the future of the Society. Gratifying as had been the increase in its funded property during the last few years, mainly through the efforts of the late Mr. Thomas Henry Wyatt, there was much reason to desire that the amount of money funded should be doubled within the next few years. The funded property now stood at 5,000*l.* odd, but by vigorous and persistent efforts he hoped to see that amount doubled within the next few years, and if, in addition, some serious effort could be made to awaken the interest of the large number (four-fifths) of the members of the Institute who did not subscribe to the funds of the Society, the time would not be very far distant when the Council would have an income of 1,000*l.* a year to devote to the work of the Society. It was intended to bring the matter before the Institute at the business meeting to be held on the 9th of April.

On the motion of Mr. Arthur Cates, seconded by Mr. J. H. Good, a vote of thanks was given to the honorary secretary for his services.

Mr. White briefly replied, acknowledging his indebtedness to the assistance he received from the Hon. Treasurer, Mr. Mair.

In accordance with By-law 43, the following five senior members of Council, having served for three years, retired, viz., Messrs. H. Currey, A. Cates, J. H. Good, H. L. Florence, and E. N. Clifton; and in their stead the following gentlemen were, on the motion of Mr. Wyatt Papworth, seconded by Mr. H. H. Collins, elected, viz., Mr. Ewan Christian, Mr. T. Graham Jackson, Professor T. Hayter Lewis, Mr. E. C. Robins, and Professor T. Roger Smith.

The president, honorary treasurer (Mr. G. J. J. Mair), and the honorary secretary, were unanimously re-elected, on the motion of Mr. E. N. Clifton, seconded by Mr. Edwin Nash; and Messrs. J. Goldicutt Turner and R. St. A. Roumieu were elected auditors.

* The balance-sheet, duly signed by the Treasurer (Mr. G. J. J. Mair), the Honorary Secretary (Mr. W. H. White), and the auditors (Messrs. Wm. Hudson and Lewis Solomon), accounted for disbursements amounting to 541*l.* 1s. 4d. (including 487*l.* paid to applicants for relief, and 40*l.* paid for two pensions), a balance of 6*l.* 10s. 9d. being carried forward to next account. The receipts amounted in all to 547*l.* 12s. 1d., including balance of 17*l.* 5s. 5d. brought forward from last account, 159*l.* 13s. 8d. dividends on stock, and 370*l.* 3s. for subscriptions (inclusive of 46*l.* 14s. 6d. arrears of subscriptions for 1881.)

FROM SOUTH AFRICA.

IN August last year the foundation-stone of a new east wing and native ward to the Kimberley Hospital was laid by M. Cornwall, esq., J.P., Mayor of Kimberley, the architect being the late Mr. L. Ford Hanson, who unfortunately did not live to carry out the work, which was done by Mr. Tom Claridge, who succeeded to his practice.

The new wing for white patients contains wards sufficient for forty beds, with two large convalescent rooms, bath-rooms, operating-rooms, ward-scullery, &c., and the native ward is built for seventy beds, with the same accommodation.

Both buildings are built of red brick throughout, in the cottage style, and were completed and handed over on the 6th of February at a total cost, to the Kimberley Hospital Board, of 11,300*l.*

RIPLEY SCHOOLS COMPETITION.

SIR,—Surely absurdity in the matter of architectural competitions has about reached its climax, as evidenced in enclosed advertisement and conditions. Seeing the advertisement in a local newspaper, I felt somewhat curious to know what peculiarities there were in the case to render a competition desirable for two small schools in two small hamlets adjacent to a small country town, and accordingly applied for the "further particulars." In reply I received the document headed "Conditions." Further inquiry as to the meaning of the various blanks left in the conditions elicited the information that the remuneration to be paid to the successful (?) architect, if any, was a matter for future arrangement. Comment is needless for those who can understand, and would be useless to others, so I refrain; but it will be interesting to know how many and what sort of designs are sent in. DECLINED WITH THANKS.

Conditions.

The architect shall set out the land and prepare and perfect all necessary plans, tracings, specifications, papers, and documents required in connexion with the erection of the two schools at Hartshay and Waingroves, and the heating and lighting thereof, and, without the assistance of a clerk of the works, will take the entire and strict supervision of the proposed works until they are in all respects completed and fit for use or occupation, being paid for his professional advice, services, and labour in connexion with the said works, including all travelling expenses in relation thereto, the sum of , that is to say, the sum of upon the signing of a formal contract, and the further sum of , at the rate of 2½ per cent. in proportion to the amount from time to time certified by the architect as being due to the contractor, and the balance of the sum of when the duties of the architect in connexion with the works are fully completed and ended to the satisfaction of the Board; the selected original plans, drawings, and specifications in connexion with the buildings to be the property and to be handed over to the Board on the completion of the works.

COMPETITION DESIGNS FOR IMPROVEMENTS IN THE MADEIRA-ROAD, BRIGHTON.

THE premiums have been awarded as follows:—

No. 1. "Sea," 200*l.*, Mr. John Johnson, 9, Queen Victoria-street, London.

No. 2. Triangle in a Circle, 100*l.*, Mr. E. E. Scott, 46a, Regency-square, Brighton.

No. 3. "Tout Ensemble," 50*l.*, Messrs. T. Lainson & Son, 167, North-street, Brighton.

The area of the proposed improvements lies between the Chain Pier (on the west) and the concrete groyne opposite Paston-place (on the east). The author of the first premiated design suggests that for the greater portion of that distance the present promenade, grass plots, and shrubs should be repeated, "as the existing arrangements [to quote his own words] are too satisfactory to be destroyed." He proposes to give a roadway 40 ft. wide, and a 15-ft. footway, with a parapet next to a sloping bank, and openings in the palisading at intervals to break the length of line. Sheltered seats would line the north side of the lawns, with a summer-house at each end of the promenade. At the foot of the grass slope would be a terrace, 15 ft. wide, and 5 ft. above high-water mark, with another terrace below, situate 1 ft. 6 in. or 2 ft. above the high-water level; a series of broad steps, leading from one terrace to the other, and down to the beach; the steps themselves would give seating accommodation whilst the children of visitors played upon the sands at low tide. Conveniences would be provided at the concrete groyne, as well as at the west end of the promenade. The baths form,—as indeed they do in all the designs,—the prominent feature of the scheme; whereas (according to the *Brighton Herald*) the Council, in their discussion upon the proposed improvements, made the baths subordinate to the promenade. The plunge baths are proposed to be tidal for both men and women, with a water area of 200 ft. by 50 ft. for the former, and 100 ft. by 50 ft. for the latter, together with fifty-eight private bath-rooms for men and thirty for women, with waiting-rooms between each section. The baths would be of a pleasing, if not very ornate, elevation, with a flat roof for the purpose of a promenade; and a light bridge would give access to the Marine-parade opposite Atlingworth-street. Adjoining the baths would be a restaurant and shops for the sale of newspapers and light literature. The estimated cost of carrying out this scheme is put at from 40,000*l.* to 53,000*l.*, according to the portion of works carried out, the baths alone requiring 30,000*l.* of the amount.

COMPETITIONS.

Kidderminster.—In a competition, limited to eight, for alterations and enlargement of the new Meeting-house and School, the designs submitted by Messrs. Payne & Talbot, architects, of Birmingham, have been selected by the building committee. The work proposed to be carried out consists of extending the body of the chapel, to give increased number of sittings on the floor and in the galleries, providing extra vestries, and erecting a new front to the building, together with other minor improvements. The schools are to be enlarged, to give better accommodation.

SEXEY'S COUNTY SCHOOL, SOMERSET.

IN November of last year the Visitors of Hugh Sexey's Hospital at Bruton issued invitations and instructions to a limited number of architects to prepare plans in competition for their proposed school to be built near Shepton Mallet. All the architects invited submitted plans, their names being Messrs. J. Giles & Gough, Messrs. Carpenter & Ingelow, and Messrs. Paull & Bonella, of London, and Mr. G. J. Skipper, of Norwich.

The Visitors forming the Building Committee had two or three meetings to examine the designs, and on the 24th of February a general meeting of Visitors was held, when, after prolonged discussion, Mr. G. J. Skipper was selected architect, his alternative set of designs being adopted for execution. Each of the unsuccessful competitors received 20*l.* towards their expenses. About 9,000*l.* is proposed to be expended on the buildings.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

948. F. Hammond, London. Chimney-pots, &c. Feb. 23, 1883.

1,064. W. Brierley, Halifax. Apparatus for heating air for warming buildings, &c. (Com. by R. Tungler, Goerlitz, Prussia.) Feb. 27, 1883.

1,099. G. Simpson, Edinburgh. Calcining cement, &c. March 1, 1883.

1,100. C. A. Wheeler, Swindon. Weather-bar for the exclusion of rain at the foot of doors and casements, &c. March 1, 1883.

1,106. G. Bürklein, Munich. Combination furniture. March 1, 1883.

1,131. J. B. Adams and J. Telford, Liverpool. Apparatus for balancing, securing, &c., sliding window-sashes. March 2, 1883.

1,153. A. Varah, Sheffield. Attaching door-knobs to their spindles. March 3, 1883.

1,154. R. E. Cox, London. Smokeless stoves, &c. March 3, 1883.

1,174. J. Rowley, London. Paving roads and ways with wood, stone, &c. March 5, 1883.

1,191. W. G. Hudson, Manchester. Formation of bricks for chimney and other flues. March 6, 1883.

1,213. T. Bradford, Manchester. Fittings for baths. March 7, 1883.

1,216. G. Napier, Manchester. Construction of walls, partitions, and ceilings. March 7, 1883.

1,234. J. M. Boekbinder, London. Treating

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

plaster of Paris for use in building, &c. March 7, 1883.

1,239. S. Low, London. Down-cast and water-tight ventilator. March 7, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named :—

Feb. 27, 1883.

5,041. E. Green, Halifax. Sewage-trap. Oct. 23, 1882.

5,178. F. F. Atkinson, New York, U.S.A. Folding tables. Oct. 31, 1882.

220. G. Davis, Aberystwith ; W. Jones, Llannon ; and R. Girdwood, Edinburgh. Chimney cowls and ventilators. Jan. 15, 1883.

445. P. Born, London. Folding lattice shutter. Jan. 27, 1883.

March 2, 1883.

4,600. W. R. Lake, London. Suspension of pictures, &c. (Com. by H. R. Heyl, Philadelphia, U.S.A.) Sept. 27, 1882.

5,239. A. J. Boult, London. Furnaces, stoves, and ranges, &c. (Com. by W. P. A. Heiser, Berlin.) Nov. 2, 1882.

March 6, 1883.

5,259. A. E. Crisp, London. Window-fasteners. Nov. 4, 1882.

5,266. R. Chapman, Patricroft, and J. Hibbert, Manchester. Apparatus for closing doors and windows. Nov. 4, 1882.

637. W. White, London. Rendering existing walls damp-proof, and tiles therefor. Feb. 6, 1883.

705. W. Russell, Pendleton. Kitchen and cooking ranges and stoves. Feb. 9, 1883.

March 9, 1883.

5,250. W. D. Scott-Moncrieff and W. Dodds, London. Valve apparatus for supplying baths with water. Nov. 3, 1882.

5,283. W. Kennedy, Glasgow. Translucent plates as substitutes for glass in roof-lights, &c. Nov. 6, 1882.

5,310. J. G. White, Bowness. Cooking-ranges, &c. Nov. 7, 1882.

5,383. J. J. Tylor, London. Apparatus for the water supply of water-closets, baths, and urinals, &c. Nov. 11, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending March 3, 1883.

3,198. T. N. Sully, Wellington. Walls of houses and bricks for the same. July 6, 1882. Price 6d.

The bricks have grooves made through them, so that when placed in position in the wall currents of air can pass through all the walls.

3,229. N. B. G. Crowe and W. James, Chester. Cisterns of flushing apparatus for water-closets, &c. July 7, 1882. Price 6d.

These are cisterns from which the water is discharged by a syphon periodically. The water is admitted by a ball-valve adjusted to fill the cistern in a given time. The syphons are formed in the sides of the cistern.

3,340. A. Drummond, Edinburgh. Appliances for securing glass to astragals and sash-bars. July 14, 1882. Price 6d.

The astragal is formed with a central ridge, with a groove on each side. A strip of metal is fitted over this central ridge, and the edges of the strip hold the panes of glass in position resting on the edges of the grooves.

3,344. W. S. Laycock, Sheffield. Self-acting window blind apparatus. July 14, 1882. Price 6d.

Inside the roller is a coiled spring, which is wound up by drawing the blind down, and ratchet friction wheels and catches are fitted to retain the blind in the position in which it is placed, until the weight attached to the bottom of the blind is lifted, when the coiled spring rolls it up again.

3,358. A. W. White and D. D. Evans, London. Bell-traps for drains. July 14, 1882. Price 2d.

This bell-trap can be lifted to allow a large quantity o liquid to pass away when required, but it afterwards auto matically closes itself again.

3,444. E. L. Ransome, San Francisco, U.S.A. Artificial stone or concrete pavement, &c. July 20, 1882. Price 6d.

To cover over basement-cellars, &c., parallel beams of iron are used, the spaces between which are filled with the artificial stone or concrete.

Published during the week ending March 10, 1883.

3,324. C. Portway, Halstead. Gas stoves for heating, &c. July 13, 1882. Price 8d.

The gas is mixed with air before combustion, and over the flame are perforated blocks of asbestos, whence the heat passes through a special chamber of fire-brick formed round the stoves.

3,353. G. Dalton, Leeds. Brickmaking machinery. July 14, 1882. Price 6d.

Toggle levers are used to operate the pressers or stamps.

3,361. T. Hughes, Market Drayton. Metallic glazing bar and fittings, for glazing without putty or paint. July 15, 1882. Price 6d.

Metal tubes are used which have a slit cut along their entire length. Two of these tubes are placed back to back, and connected together by strips of metal. The glass is placed in the slits on each side of this compound bar, and wedges are used to secure it in the same.

3,371. H. A. Williams, Lincoln. Pulleys for wind-blind rollers. July 15, 1882. Price 2d.

The pulley is mounted on a pin screwed into the bracket, and on the pin is a collar with a stud fitting into a slot on the pulley. (*Pro. Pro.*)

3,459. A. Dix and T. H. Dix, Rock Ferry. Apparatus for checking cords of blinds, &c. July 20, 1882. Price 6d.

A cam is so mounted in the bracket that when the cord is released the cam will jam it, but when the cord is pulled the cam falls free.

3,487. E. Edwards, London. Apparatus for maintaining a constant draught in chimneys, &c. (Com. by A. Marques, Bordeaux). July 21, 1882. Price 6d.

A metal pipe is fitted to the top of the chimney, which has an enlarged conical base. Inside is arranged another smaller and shorter pipe, and the air enters apertures round the base of the larger pipe and passes up the annular space between the two pipes, creating a draught up the smaller pipe through which the smoke, &c., passes.

LIVING IN "FLATS."

SIR,—Absence from town has prevented my seeing earlier your excellent article on "Flats," which appeared on February 3rd (p. 135, *ante*). I consider you have there touched on a matter which, before long, must be seriously considered, as a remedy for the continuous expansion of London, and for the immense distances which one has now to traverse to visit one's friends and relations. Having lived much on the Continent, I can speak from experience of the advantages of the Continental system of town dwellings. I know that when living on a fourth-floor flat, I have had considerably less running up and down stairs during the day than when residing in an ordinary London house, with a bed-room on the second or the third floor. Look at all the fine new buildings in Oxford-street; is there an upper house in one of them fit for residential purposes? I know a block of six or seven, each having its two or three floors, with one room and a half on each, all quite unfitted for residence of tenants capable of paying a remunerative rent; yet one good *porte cochère* and grand staircase for the whole would not have taken up as much room as all the little inconvenient staircases. Many of such "upper parts" are, moreover, not required as offices, and one sees them standing empty year after year, whilst many like myself, who do not want a whole house, would be glad to find moderate-sized flats *properly and conveniently arranged*, and near to the main thoroughfares. Another idiosyncracy is produced by an obstinate adhesion to the old sash or *guillotine* arrangement of large windows. For ordinary-sized windows nothing could be better, but for huge and heavy sheets of plate-glass or windows opening on to balconies and terraces, we should surely learn better.

H. H. S.

"AN ARCHITECT ON LAWYERS."

SIR,—The question of the superiority of legal as against skilled arbitrators in the building and engineering trades is an old one, but yet one on which much may yet be fairly said.

I believe the only argument holding any ground in favour of legal arbitrators is, that a want of strictly legal knowledge is liable to render the whole work of an arbitration abortive in consequence of some slight slip on the part of the arbitrator on a question of law. This, however, is found seldom to happen in practice, and the cases of awards being set aside on such grounds bear a very small proportion to the number of arbitrations actually held by skilled referees; they bear, indeed, only a small proportion in comparison with the decisions set aside when made by lawyers, official referees, and judges.

I quite agree with Professor Kerr that a legal arbitrator is often preferred by the party who has, or who fears he has, the weaker case, in the hope that in the mystification of the legal mind on technical points, a chance award may be snatched.

In a purely technical instance some time ago, in which I was engaged, when the case was called, and counsel had partly opened, Mr. Baron Pollock declined to try the case and suggested arbitration. Plaintiff was willing, but the defendant objected, and as the judge would not try it there was no alternative but for him to refer it to an official reference.

Here, then, we had a purely technical case referred to the judgment of a learned, and, no doubt, highly respectable barrister, but surely very much inferior in learning and position to a judge of long experience on the bench who had shrunk from the responsibility, although assisted by a jury who might have contained two or three skilled men competent to form an opinion.

At the same time, I gratefully acknowledge that in many instances where I have acted as arbitrator, I have found the services of counsel of most material assistance; and I think, unless each party be legally represented, fair play has not such a good chance of occurring, because it is not every referee who can drag the case out of reluctant witnesses and get a full and impartial view of it before his mind unless it be properly and fully brought out by the counsel on both sides.

Whatever, therefore, may be the advantages of a legal referee in legal matters, or in causes involving legal points, it is certain that in all matters involving technicality and skill, either in engineering, building, or compensation cases, the architect or engineer is the proper judge, and the one most likely, by clearly understanding every detail, to arrive at a right and just award.

J. P. SPENCER.

THE SCHOOL BOARD AND ITS ARCHITECTS.

SIR,—A lively discussion arose last Thursday on the proposal brought forward by Sir E. Currie to enlarge the offices and stores of the Board. The scheme, of which this is the first item brought under discussion, is rather a comprehensive one; and a member of the Board stated (and this remains uncontradicted) that, if carried out in its entirety, the whole cost of the School Board buildings on the Embankment will have exceeded 113,000*l*., including cost of site. This debate (which, like all our more interesting debates, is unnoticed in the columns of the daily papers) stands adjourned until a previous question, of storage of the materials used in the schools, has been decided by a committee. My object in writing is to endeavour to gain light on a somewhat obscure point. The existing structure was put up about eight years ago under the direction of Mr. Bodley. Considering that the work of the Board has largely increased of late, he is not to be blamed for the narrowness of the accommodation provided, and very few defects in the building have been discovered. My own impression is that he ought to be invited to enlarge the buildings, and that to call in another architect for this purpose is an unusual and not very complimentary step; but on this your professional readers will form a better opinion than I can.

There is no thought of economy in the proposed employment of the standing architect to enlarge this façade, with the accompanying structures in the rear, inasmuch as it is proposed to pay him the usual architect's commission, on the assumption that this extra work is not covered by his salary. Here, again, is a point on which any non-professional person has a difficulty in deciding.

A NEW MEMBER OF THE BOARD.

GLOUCESTER CATHEDRAL.

SIR,—A *conversazione* is to be held in the Chapter House of Gloucester Cathedral on Thursday, the 29th inst., in connexion with the recently-formed "Cathedral Society" of this city. If any of your readers have architectural or other drawings of the cathedral or portions of it, more particularly having special reference to its past history, we are requested by the executive committee to beg that they will kindly lend such for exhibition; also any objects of interest, other than drawings, having direct or indirect connexion with the cathedral or its history, will be gladly received. Every care will be taken of all exhibits, and they will be duly returned at the close of the exhibition, which will probably remain open a day or two after the *conversazione*. All loans for exhibition to be consigned to the care of the Hon. and Rev. Canon Lyttelton, Depôt of the S.P.C.K., College-court, Gloucester.

HENRY MEDLAND, } Members of the Sub-
CAPEL N. TRIPP, } Committee.

Spitalfields Market Roof. — The first premium was awarded to Messrs. Oswald Gardner & Co. for their design for the Spitalfields Market roof competition, advertised in our issue of February 17th. There were eighteen competitors.

CORNER BUILDINGS AND THE LINE OF FRONT.

BARLOW, ELSDON, AND THE KENSINGTON VESTRY.

SIR,—Referring to an article in your paper upon "Corner Buildings and the Line of Front" (vol. xli., p. 724), I would direct your attention to a judgment pronounced last week by Vice-Chancellor Bacon, which fully bears out the argument which you so clearly set forth in the above article, and as it is upon a subject of such great importance both to builders and landowners, may I be allowed to suggest that you publish it in your widespread paper?

B.

*** The judgment is rather long, but the subject, as our correspondent says, is so important to a large number of our readers, that we will see what can be done with it in our next.

A DIFFERENCE.

SIR,—I observe in your journal of January 6th a notice of the new Church of St. Michael at Queenstown, which was also mentioned in your paper in November, 1880. It was then stated that the estimated cost was 7,000*l.* Now it is said to be 13,000*l.*

I also took part in the competition in which these plans were sent in, my instructions being that the cost of the proposed church was not to exceed 3,000*l.*, and that it should be built on the same site as the present church by being built round that building. This, of course, involved a wide single-span roof, and the stipulated amount only admitted of a very plain brick building.

ARCHITECT.

CORNWALL WESLEYAN MIDDLE-CLASS SCHOOL ARBITRATION.

THE dispute between the directors of the Wesleyan Middle-Class School at Truro and the contractors, Messrs. John Julian & Sons, has been settled. Messrs. Julian claimed 1,892*l.* 9s. 10d., "balance of account rendered." Subsequently, however, they considerably added to that amount, on account of alleged serious delays caused by the architect neglecting to supply details, &c. For this delay the contractors charged 100*l.*, raising their claim to 1,992*l.* They subsequently made an additional charge of 500*l.* for having been put to serious inconvenience pecuniarily and otherwise, and further added to their claim 18*l.*, and for charges consequent on this account of 500*l.*, making their total claim 2,560*l.* 14s. 10d. This claim was regarded by the directors as in advance of what they considered fair and reasonable and, they altogether refused to admit it. Consequently the matter was referred to arbitration. Messrs. Hodge, Hockin, & Marrack were solicitors for Messrs. Julian, Mr. T. R. Olver, of Falmouth, being their referee; Mr. F. Hearle Cock, of Truro, was solicitor for the directors of the school, with Mr. Trounson, of Penzance, their referee. Mr. Gordon M. Hills, of London, was chosen umpire, who has awarded 1,366*l.* to Messrs. Julian as against the claim of 2,560*l.*, the arbitrator having thus struck off 1,194*l.* The directors will have to pay all the legal and other costs of the reference, amounting to 357*l.* 0s. 6d. The *Cornish Telegraph* says:—"Is it not hard that the Wesleyan Middle-Class School should be saddled with the whole of the very heavy costs of the arbitration on the claim of the contractors for extras? Julian & Sons claimed nearly 2,600*l.*,—and have been awarded just over one-half of it. Surely the fair thing would have been to have divided the costs. The arbitrator's fee alone was 200*l.*"

VARIORUM.

THE current number of the *Nineteenth Century* includes several papers which will interest many of our readers.——Lady Lindsay, of Balcarres, contributes "a fragment" to *Temple Bar*,—"Miss Dairsie's Diary,"—which is perfect so far as it goes, not a sentence too much or too little. It has the usual touch of sadness observable in Lady Lindsay's previous contributions, and is very charming. It will not soon be forgotten by those who read it.——Mr. S. C. Hall wishes his friends to know that the work he has been several years preparing, "Retrospect of a Long Life, from 1815 to 1883," will be published in two volumes, on the 20th March, by Messrs. Bentley & Son, 8, New Burlington-street, W. It will consist of recollections of "things he has seen and people he has known,"—authors, artists, actors, and the "giants in both Houses,"—during the earlier half of the century; a review of the art history and that of art manufactures, as they were in 1840, and as they are in 1883; with many other matters of general interest. The volumes will contain a memory of Mrs. S. C. Hall and her works.

Miscellanea.

The Lambeth Clearance Scheme.—Mr. D. Cubitt Nichols, appointed by the Home Secretary, opened an inquiry on Saturday, at the Lambeth Vestry, Kennington-road, into the correctness of the official representation made to the Metropolitan Board of Works by the medical officer of health for the parish of Lambeth as to the Windmill-row, New-cut, Lambeth, Scheme, 1883, and whether the area embraced in the scheme was an unhealthy area, and the scheme was sufficient for its improvement. Mr. Meadows White, Q.C., on behalf of the Metropolitan Board of Works, stated that there were serious defects in the houses proposed to be demolished. They were very damp and unwholesome, and ought to be pulled down. The locality was a very crowded one, and the death-rate was 62 per 1,000, as compared with 23 for the whole district of 15,000 inhabitants, and zymotic, pulmonary, tubercular, and other diseases were very prevalent. With regard to the scheme, they proposed to erect buildings of a superficial area of 25,380 ft., with open yards, streets, and so forth, of 16,290 ft., making in all 41,670 ft., so that there would be an additional 10,000 ft. for ventilating purposes. The estimate for the present scheme was a gross cost of 20,400*l.*, with an estimate of 3,000*l.* for roads; but there would be 2,000*l.* recouped, which would make a total net cost for the scheme of 21,400*l.* Evidence was given in support of the scheme, and the inquiry was adjourned.

St. George's Hall.—A new first piece by Mr. Gilbert à Beckett, entitled "A Mountain Heiress," gives an opportunity for some more than usually good acting by Mr. Corney Grain, Miss Fanny Holland, and Mr. Alfred Reed. The music, which is bright and pretty, is helped by Miss Wardroper and Mr. North Home. Mr. Grain's musical sketch, "*En Route*," one of the best he has done, is about to give place to a novelty, "Our Mess," promised for Easter Monday. The variety which this gentleman succeeds in producing in these capital sketches is remarkable.

The Southesk Viaduct, Arbroath and Montrose Railway.—On the 1st inst., the Government Inspector, Colonel Yolland, accompanied by Mr. Galbraith, consulting engineer, London; Mr. Blyth, C.E., of the North British Railway; Mr. Arrol, contractor, and others, inspected the viaduct over the Southesk River, Montrose, on the Arbroath and Montrose Railway. The seventeen arches of the bridge were severely tested by three of the heaviest engines and tenders belonging to the Company, weighing, in the aggregate, between 230 and 235 tons.

St. Peter's Church, Preston.—A handsome polished brass eagle lectern has just been executed for the above, by Messrs. Jones & Willis, of Birmingham and London. The lectern is of the twelfth-century design. The base is square on plan, and filled in with pierced and engraved panels. The shaft is circular, with chased knop of Early English foliage. The top of the pillar takes the form of a ball with foliage underneath, from which the bird stands out.

St. Peter's Church, Streatham.—At a committee meeting held at St. Peter's Vicarage, Streatham, plans for the completion and enlargement of the above-named church were submitted by Mr. George H. Fellowes Prynne, architect. The plans were formally approved, being in accordance with the general scheme submitted previously, and resolutions were passed that the west end should be carried out as soon as possible according to the design.

Five Memorial Stones were laid on the 1st of March at the New Radnor-street Schools and Mission Hall by Dr. Wood, Mayor of Southport, Alderman McArthur, Mr. J. W. Gabriel, Mrs. Horace Marshall, and Mr. Deputy Brass (the builder). The building, which will cost 6,600*l.*, stands upon the land belonging to the French Protestant Hospital, and Messrs. Roumieu & Aitchison are the architects.

Local Board Appointment.—Mr. J. W. Dallimore, of Brighton, has been elected to the vacant post of Surveyor to the Local Board of Health at Littlehampton. There were seventy-six candidates.

Proposed Works in Paris.—The Prefect of the Seine has submitted to the Paris Municipality the proposal of a loan of 220,000 fr. to be issued in the course of five years, bearing interest at five per cent., and redeemable in seventy years. Of the proposed loan 90,000,000 fr. would be devoted to sewerage improvements, 10,000,000 fr. to hospital extension, 25,000,000 fr. to school buildings, 37,000,000 fr. to roads, and so on. The proposal will probably be discussed after Easter.

Medals.—Mr. W. J. Taylor, of Red Lion-street, has just published a medal of the late Lord Londesborough, as first President of the British Archæological Association; and also one of Mr. Roach Smith, engraved some years since, but never before published. The reverse of this has a good and very effective view of the Roman walls of Dax (d'Aquis), in the south-west of France.

Chester Cathedral.—The north wall of the nave of Chester Cathedral, which was not included in the renovation, is shortly to be enriched with mosaics, the gift of Mrs. Platt, widow of the late Mr. Platt, of Stalybridge. It was at Mr. Platt's expense that the cathedral choir-roof was decorated.

New Station at Lucerne.—According to a Vienna journal, it is in contemplation to erect at Lucerne a station on an imposing scale in connexion with the Gothard Railway. It is to be on the quay facing the lake, and in the vicinity of the Kurhaus, which was opened last summer.

TENDERS.

For Jews' Free School, Bell-lane, Spitalfields. Messrs. N. S. Joseph & Pearson, architects. Quantities by Mr. S. B. Wilson:—

W. Hearn	£20,125 0 0
E. Conder	17,980 0 0
T. Rider & Son	17,648 0 0
G. S. Pritchard	17,379 0 0
Killby & Gayford	17,271 0 0
Trollope & Sons	17,240 0 0
Hall, Beddall, & Co.	17,140 0 0
Mowlem, Burt, & Co.	17,126 0 0
Scrivener & Co.	17,092 0 0
Bangs & Co.	16,979 0 0
Adamson & Sons	16,769 0 0
B. E. Nightingale	16,733 0 0
G. S. S. Williams & Son	16,370 0 0
Kirk & Randall	16,292 0 0
Patrick & Son	16,280 0 0
Merritt & Ashby	16,255 0 0
W. Brass	16,221 0 0
W. Grover	15,984 0 0
J. T. Chappell	15,880 0 0
Colls & Son	15,775 0 0
Patman & Fotheringham	15,773 0 0
Ashby Bros.	15,375 0 0

For making roads and sewers on the Beddington Park Estate, Mitcham, Surrey, for the House Improvement and Supply Association (Limited). Mr. A. Bedborough, architect. Quantities supplied by Messrs. Curtis & Sons:—

	Main Estimate.
Botterill	£6,049 0 0
J. Trueman	5,280 0 0
G. Smith	5,225 17 1
W. Harris	4,594 0 0
J. Pizzey	4,500 0 0
J. Bell	4,460 0 0
W. Langridge	4,150 0 0
J. Jackson	4,040 0 0
Bottoms Bros.	3,985 0 0
W. Nicholls	3,955 0 0
Ford & Everett	3,940 0 0
Woodham & Fry	3,795 0 0
W. Williams	3,722 0 0
W. Jenner	3,560 16 0

For Granite Kerbing.

	Aberdeen.	Cornish.	Norwegian.
Botterill	£1,795 0	£1,166 0	£1,142 0
J. Trueman	1,324 0	1,216 0	1,270 0
J. Jackson	1,305 0	1,089 0	1,142 0
J. Pizzey	1,300 0	1,050 0	1,050 0
Ford & Everett	1,280 0	1,000 0	950 0
W. Harris	1,212 13	1,103 17/6	1,158 5
W. Nicholls	1,195 0	955 0	1,009 0
W. Jenner	1,189 14/6	—	—
J. Bell	1,152 0	1,100 0	1,131 0
G. Smith	1,133 8/6	916 8/6	807 13
W. Langridge	1,133 0	956 0	1,106 0
Woodham & Fry	1,124 0	1,015 0	1,069 0
Bottoms Bros.	1,069 0	1,015 0	961 0
W. Williams	954 0	895 0	980 0

For repairs and decorations to Nos. 10, 11, and 12, Harrington-gardens, Kensington, for the National Freehold Land Society. Mr. W. Lee, architect:—
W. Shurmur (accepted).

For village residence, Forest Hill. Mr. H. D. Appleton, architect. Quantities by Mr. F. F. W. Miller:—

Boddy	£1,918 0 0
L. & R. Roberts	1,847 0 0
Howard & Dorrell	1,840 0 0
Clarke & Bracey	1,826 0 0
Smith	1,739 0 0
W. Shurmur	1,719 0 0

For alterations and new shop-front at 114, Shoreditch High-street, for Messrs. Matthew Bros.:—
Parrish & Hawker (accepted).

For house for General Cobbe, The Orchard, Bedford Park. Mr. J. Donkin, architect:—
J. J. Bryant (accepted) £1,410 0 0

For roads and sewers, for the Chelmsford Land Company (Limited), Dovercourt, Essex. Messrs. Whitmore & Reeves, surveyors, Chelmsford and London:—

	No. 1 scheme.	No. 2 scheme.
G. Impey, Leytonstone	£3,174 13 10	£950 11 4
F. J. Titcombe, Merton and Mortlake	2,950 0 0	3,250 0 0
J. A. B. Marshall, Brighton	2,885 11 6	3,629 5 0
J. Jackson, West Ham	2,700 0 0	3,100 0 0
T. Huntley, Loughboro' Junction	2,560 0 0	3,353 1 3
F. Johnson, Walthamstow	2,362 19 0	2,525 9 0
F. W. Etheridge, Deptford	2,320 0 0	800 0 0
J. B. & F. Bennett, Ipswich	2,208 0 0	2,563 0 0
G. F. Ward, Fulham	2,204 5 2	3,100 15 10
J. Bell, Wood Green	2,173 0 0	2,664 0 0
R. Nicholson, Southend-on-Sea	2,130 16 5	2,871 5 0
J. Hoare & Son, Blackfriars-road (amended)	2,122 0 0	2,999 0 0
Surveyors' estimate	2,078 13 1	2,378 10 9
T. A. Dunmore, Hornsey	2,065 0 0	2,683 0 0
H. Wilson, Battersea	2,065 0 0	2,450 0 0
T. Spurgeon, Forest Gate	2,050 0 0	2,370 0 0
W. Carter, Anerley (amended)	2,043 4 8	2,599 6 4
W. Nicholls, Wood Green	2,019 17 0	2,293 3 6
T. Adams, Hackney	2,000 0 0	2,550 0 0
W. A. Harris, Stratford	1,999 0 0	2,297 0 0
W. Wood, Chelmsford	1,993 0 0	2,416 0 0
T. Moran, Harwich	1,986 11 6	2,460 17 0
Betts & Co., Clacton-on-Sea	1,955 0 0	970 0 0
N. Saunders & Sons, Dedham	1,944 0 0	2,460 0 0
J. C. Trueman, South Hackney	1,900 0 0	2,430 0 0
W. Armstrong, Chiswick	1,705 8 2	2,007 8 2
J. Cardus, Acton (accepted)	1,695 0 0	2,149 0 0
J. Hoare & Son, Blackfriars-road (tender made up incorrectly)	1,235 0 0	2,112 0 0
W. Carter, Anerley (tender made up incorrectly)	1,142 2 4	1,455 4 0

For alterations at the City Scotch Stores, for Messrs. Cooper & Trew. Messrs. Bird & Walters, architects:—

Williams & Son	£295 0 0
Spencer & Co.	230 0 0
Anley	205 0 0
Jackson & Todd (accepted)	290 0 0

For stone work to terraces, alcoves, parapets, &c., for the Matlock Bath, Pavilion, and Gardens Company (Limited). Mr. Jno. Nuttall, architect, Matlock Bridge. Quantities by Mr. F. S. Smith:—

	No. 2.	No. 3.
W. B. Askew, Matlock	£28 6 9	£120 8 3
A. Bridge, Matlock	29 9 1	120 1 10
Drabble, Matlock	24 3 0	101 9 7½
G. Boden, Matlock (accepted)	19 19 0	93 5 6

For the erection of stables to Crown Hotel, Matlock Bridge, for Mr. W. H. Hutchinson. Mr. Jno. Nuttall, architect. Quantities by Mr. F. S. Smith:—

W. Statham, Matlock (accepted)	£577 0 0

For repairs and alterations to Nos. 3 and 4, Vere-street, Clare Market, for Mr. Crouch. Mr. A. Ashbridge architect:—

Riley Bros.	£177 10 0
Bamford	163 10 0
E. Waller (accepted)	142 12 0

For the erection of villa residence at the junction of Brook and Conduit-streets, Gloucester, for Mr. B. Rhodes. Mr. Joseph G. Denton, architect:—

W. Williams, Gloucester	£490 3 0

For alterations and additions at 10, Well-court, Queen-street. Mr. F. Chambers, architect:—

W. Read	£1,030 0 0
G. Shaw	995 0 0
Wall Bros.	843 0 0
W. Shurmur	828 0 0
Andrews	455 10 4

For bonded vaults, &c., Maidstone, for Mr. Thomas Grant. Quantities supplied by Messrs. Ruck, Son, & Smith, architects:—

J. G. Naylar & Son, Rochester	£1,400 0 0
Cox Bros., Maidstone	1,384 0 0
Thomas Simmonds, Maidstone	1,359 0 0
Wallis & Clements, Maidstone	1,332 0 0
George Gray, Maidstone	1,287 0 0
Richard Avard, Maidstone (accepted)	1,283 0 0

For erecting stables and coach-house at rear of 453, Bethnal Green-road, for Mr. J. Smith. Mr. Joseph Harris, architect and surveyor:—

Parrish & Hawker (accepted).

For the erection of two houses at Torrington Park, for Mr. E. Homan. Messrs. Ernest George & Peto, architects, No. 11, Argyll-street. Quantities by Messrs. Stoner & Sons:—

Stafford	£3,853 0 0
Perkins	3,756 0 0
Manly	3,678 0 0
Simpson & Son	3,649 0 0
Wall Bros.	3,630 0 0
Eyears & Sampson	3,610 0 0
Ashby Bros.	3,537 0 0
Cooper	3,474 0 0
Ploughman	3,336 0 0
Kendal	3,240 0 0

For alterations and additions to "The Lodge," Streatham, for Mr. C. A. Payne. Messrs. Ernest George & Peto, architects. Quantities by Messrs. Stoner & Sons:—

Boyer	£1,249 0 0
Bugg	1,210 0 0
Nash	1,195 0 0
Perkins	1,194 0 0
Eyears & Sampson	1,148 0 0
Mason	1,147 0 0

For new Church Institute, Market-street, Ilkeston. Mr. Henry James Kilford, architect:—

Shaw	£1,110 0 0
Warne (accepted)	1,000 0 0

TO CORRESPONDENTS.

G. J. S.—W. S.—J. G. D.—H. K.—H. J. I.—G. A. R.—C. & Sons.—A. (yes).—D. J. M. (next week)—F. B.—J. T.—H. H. S.—H. K.—P. & T.—A. G.—Mr. L.—J. H. C.—E. W.—S. B. W.—W. R. & Co.—P. Bros.—J. C. B.—C. L.—J. R.—C. R. S.—S. H.—T. W.—J. B.—R. & A.—Messrs. G.—W. W. L.—E. & S.—G. W. P.—H. J. K.—M. Bros. & Co.—G. H. F.

Correspondents should address the Editor, and *not* the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors

NOTICE TO ADVERTISERS.

GOOD FRIDAY.

"THE BUILDER" for the week ending MARCH 24th will be published on THURSDAY MORNING, the 22nd inst. Advertisements for insertion in that issue must therefore reach the Office before **THREE p.m.** on **Wednesday**, the **21st.**

Persons advertising in the *Builder* may have REPLIES ADDRESSED TO THE OFFICE 46, Catherine-street, Covent-garden, W.C., FREE OF CHARGE.

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DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent

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ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Workshops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.
Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.